2016 REVISION OF THE REGIONAL AIR QUALITY STRATEGY FOR SAN DIEGO COUNTY

FINAL - DECEMBER 2016

SAN DIEGO COUNTY
AIR POLLUTION CONTROL DISTRICT
10124 Old Grove Road
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2016 Revision of the Regional Air Quality Strategy for San Diego County

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EXECUTIVE SUMMARY

Ozone is a harmful ground-level air pollutant that forms when other air pollutants react under the influence of sunlight and warm temperatures. As such, reducing emissions of air pollutants that form ozone (also known as "precursors") is required by state and federal law. The Regional Air Quality Strategy (RAQS), adopted by the San Diego County Air Pollution Control Board (Board) on June 30, 1992, addresses state ozone standards. It is periodically updated as new measures become technologically feasible, improve air quality, or protect public health. These measures reduce ozone-forming emissions from stationary sources, such as industrial operations and manufacturing facilities. The individual measures in the RAQS are then developed into proposed rules that are reviewed by the public and considered for adoption by the Board. Once adopted, the District assists affected facilities to help understand and comply with new requirements that may affect their operations.

The San Diego County Air Pollution Control District (District) has prepared a 2016 RAQS Revision that fulfills all statutory requirements. The Revision consists of the following components:

- **An overview of the statutory requirements** (Chapter 1).

- **Assessment of air quality improvement, trends and exposure indicators** (Chapter 2). Despite growth in population and vehicle miles traveled, volatile organic compounds (VOC) and oxides of nitrogen (NOx) emissions have been reduced, resulting in fewer exceedances of the one-hour and eight-hour ozone standards. Exposure to ozone air pollution and associated risks to public health and welfare have also significantly decreased.

- **Recent and projected future emission reduction rates countywide** (Chapter 3). Between 2007 and 2014, daily VOC emissions were reduced 3.9% annually, while NOx emissions were reduced 7.0% annually. Further reductions are anticipated through 2035 given the local, state and federal control measures already in place.

- **Control measures adopted since 2009** (Chapter 4). Six VOC control measures have been adopted and implemented as rules since 2009, resulting in VOC emission reductions averaging 3.45 tons per day. Additionally, two NOx control measures were adopted and implemented as rules during the same timeframe, resulting in NOx emission reductions of up to 1.65 tons per day. One other NOx control measure (applicable to boilers) was determined to be infeasible due to insufficient cost-effectiveness and thus was not adopted as a rule. However, the measure is already implemented in some other regions and will be reevaluated during the next three years in light of possible advances in control technology or reductions in control costs.

- **Control measures scheduled for review and possible adoption as rules during next three years** (Chapter 4). Three VOC control measures and four NOx control measures, listed below, will be further evaluated during the next three years for feasibility and rule adoption, if warranted. Based on a preliminary evaluation, these seven measures would

collectively reduce VOC emissions by approximately 0.3 tons per day, and NOx emissions by approximately 1.2 tons per day:

- Composting Operations (Non-Residential) (Possible new Rule 67.25)
- Further Control of Marine Coatings (Possible amendments to Rule 67.18)
- Further Control of Aerospace Coatings (Possible amendments to Rule 67.9)
- Further Control of New Stationary Engines – Best Available Retrofit Control Technology (Possible amendments to Rule 69.4.1)
- Further Control of Natural Gas-Fired Fan-Type Central Furnaces (Possible amendments to Rule 69.6)
- New Water Heaters, Small Boilers, Process Heaters, and Steam Generators between 75,000 and 600,000 British Thermal Units (BTU)/hour (Reevaluation of possible amendments to Rule 69.2.1)
- Medium Boilers, Process Heaters, and Steam Generators between 2 million and 5 million BTU/hour (Reevaluation of possible new Rule 69.2.2)

- **Overview of incentive programs** (Chapter 5). Since 2008, the District has implemented nine grant programs to upgrade high-emitting equipment to newer, lower-emitting technologies in advance of or beyond regulatory requirements. More than $68 million has been granted to equipment owners, resulting in combined emission reductions (VOC, NOx, Carbon Monoxide (CO), and Particulate Matter (PM)) exceeding three tons per day.

- **Review of transportation control measures** (Chapter 5). The San Diego Association of Governments (SANDAG), the regional transportation planning agency, continues to implement regional transportation control measures to reduce motor vehicle use, thereby reducing emissions and improving air quality. The measures expand access to 1) public transit, 2) vanpools, and 3) Park-and-Ride/Bicycle facilities, as well as enhancements to the regional high-occupancy vehicle (HOV) lane system.

- **Reaffirmation of state emission offset repeal** (Chapter 6 and Appendix II). The 2016 RAQS Revision includes a detailed reassessment and reaffirmation of the District's previous findings that state emission offset requirements are not necessary for San Diego County to achieve and maintain the state ozone standards by the earliest practicable date. A related finding is also reaffirmed, that unbanked emission reductions from the voluntary shutdown of sources compensated for permitted emission increases from new or modified sources that may have otherwise triggered state offset requirements. Federal offset requirements are not affected by these findings and remain in effect.

Pursuant to state law, a revised emission control strategy must be at least as effective in improving air quality as the control strategy being replaced (H&SC §40925(b)). The additional control measures included herein provide additional reductions of ozone precursor emissions. Therefore, the proposed 2016 RAQS Revision is more effective in improving air quality.

1. BACKGROUND

The RAQS addresses state requirements, pursuant to the California Clean Air Act (CCAA) of 1988 (California Health & Safety Code (H&SC) §39000 et seq.). The CCAA requires areas that are designated nonattainment of state ambient air quality standards for ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide to prepare and implement state plans to attain the standards by the earliest practicable date (H&SC §40911(a)). With the exception of state ozone standards,[1] each of these standards has been attained in the San Diego Air Basin (defined as "All of San Diego County"[2]). Accordingly, the San Diego County Regional Air Quality Strategy (RAQS) was developed to identify feasible emission control measures and provide expeditious progress toward attaining the state ozone standards. The two pollutants addressed in the RAQS are volatile organic compounds (VOC) and oxides of nitrogen (NOx), which are precursors to the formation of ground-level ozone. Exposure to ozone at levels exceeding the standards can impact lung function by irritating and permanently damaging the respiratory system. Ozone is also harmful to crops and vegetation, and can damage rubber, plastic, and other materials.

Air quality management in San Diego County is a shared responsibility among several agencies pursuant to state and federal laws. Locally, the San Diego County Air Pollution Control District (District) is entrusted with regulating stationary (fixed) sources of air pollution, including power plants, manufacturing and industrial facilities, stationary internal combustion engines, gas stations, landfills, and solvent cleaning and surface coating operations. Accordingly, the emission control measures identified in the RAQS focus on stationary sources.

However, approximately 67% of the air pollutants in the region are emitted by motor vehicles and other mobile sources (e.g., ships, trains, construction equipment, etc.). Emission standards for mobile sources are established by the California Air Resources Board (ARB) and the U.S. Environmental Protection Agency (EPA). The District has no jurisdiction over these sources. However, further reductions in mobile source emissions are encouraged by the District through its grant programs (e.g., Carl Moyer, Proposition 1B Goods Movement Emission Reduction Program, etc.). These programs incentivize the turnover of high-polluting equipment by offering funds to qualifying projects that reduce mobile source emissions. The District also encourages the public to reduce vehicle trips by using alternative means of transportation, and works closely with local groups to encourage thoughtful land use and street design improvements that reduce emissions. The reduction in mobile source emissions resulting from these and other efforts, along with the reduction in stationary source emissions from the District's control measures, collectively provide expeditious progress toward attainment of the ozone standards.

State law requires the RAQS to provide for a five percent average annual reduction in VOC emissions and in NOx emissions (averaged every consecutive three-year period). If that is not achievable, it must include an expeditious schedule for adopting every feasible emission control measure under an air district's purview (H&SC §40914). This RAQS Revision reflects

[1] The state ozone standards are 0.090 parts per million (ppm) averaged over one hour, and 0.070 ppm averaged over eight hours. The standards are attained when each monitor in the region has no exceedances during the previous three calendar years, except for exceedances affected by highly irregular or infrequent events (as defined in Appendix 2 to California Code of Regulations, Title 17, §70300-70306).

[2] The San Diego Air Basin is defined in the California Code of Regulations, Title 17, §60110 (17 CCR 60110) as "All of San Diego County."

expeditious adoption of every feasible control measure. Notably, none of the state's 35 air districts has demonstrated a sustained five percent average annual reduction in VOC and NOx emissions.

1.1 STATUTORY REQUIREMENTS

State law requires periodic progress reports regarding implementation of control measures and plan revisions, as necessary, to reflect and respond to changing circumstances (H&SC §40924 and §40925).[1] An air district may revise an emission reduction strategy if it demonstrates to the ARB's satisfaction that the modified strategy is at least as effective in improving air quality as the strategy being replaced (H&SC §40925(b)).

This RAQS Revision was prepared pursuant to ARB guidance and complies with the applicable requirements of the CCAA as follows:

- **Air Quality Improvement**. Assess the extent of ozone air quality improvement achieved during the preceding three years (H&SC §40924(b)(1), addressed in Section 2);

- **Countywide Emission Reduction Rates**. Compare estimated rates of total countywide emission reductions over the preceding three years to the rates previously anticipated in the RAQS for that same period, and incorporate updated projections of population, industry, and vehicle-related emissions growth (H&SC §40925(a), addressed in Section 3.1, Table 4);

- **Rule Adoption Dates**. Compare the forecasted and actual dates for adopting and implementing each air district control measure (H&SC §40924(a), addressed in Section 4, Tables 7, 8, and 9);

- **Control Measure Emission Reductions**. Compare the expected emission reductions for each control measure to a newly revised estimate (H&SC §40924(b)(2), addressed in Section 4, Tables 7, 8, and 9);

- **Control Measure Cost-Effectiveness**. Include an assessment of the cost-effectiveness of available and proposed control measures and contain a list which ranks the control measures from the least cost-effective to the most cost-effective (H&SC §40922(a), addressed in Section 4, Tables 7 and 9);

- **Updated Rule Adoption Schedule**. Include an updated schedule for expeditiously adopting every feasible control measure for emission sources under the District's purview (H&SC §40914(b)(2), addressed in Section 4, Table 9); and

[1] The RAQS was initially adopted by the San Diego County Air Pollution Control Board (Board) in June 1992, and last updated in 2009. In 2012, District efforts were focused on meeting federal ozone planning requirements, including preparation of the Redesignation Request and Maintenance Plan for the 1997 National Ozone Standard (78 FR 33230, July 5, 2013). The District has continued moving forward with plan implementation including rulemakings, permitting and compliance, mobile source incentive programs, education and outreach, and other program implementation activities.

- **Emission Offsets**. Determine whether the locally repealed state requirements for emission offsets should be reinstated to achieve and maintain state ozone standards by the earliest practicable date (H&SC §40918.6, addressed in Section 6.1).

Additionally, pursuant to ARB guidance ("2003 Triennial Assessment and Plan Revisions"), this RAQS Revision includes a summary of existing financial incentive programs for reducing emissions (addressed in Section 5.1).

1.2 RELATIONSHIP BETWEEN THE RAQS AND THE SUBSEQUENT RULE DEVELOPMENT PROCESS.

This RAQS Revision reflects the District's projection of future regulatory activity for purposes of providing expeditious progress toward attaining the state ozone standards. As planned activities, the proposed control measures found in Section 4.3 are initial proposals based on evaluation of currently available information, and are subject to the rule development process and Board consideration prior to implementation.

The rule development process includes many steps, including an overall assessment of emission reductions necessary to attain the state and federal ozone standards as expeditiously as practicable. Should further emission reductions be necessary, the District reviews control measures and adopted rules in other regions, consults with affected parties, develops draft rules and technical support documentation, conducts environmental reviews, and encourages the public to review and comment. Consideration of proposed rules is conducted by the Board at a public hearing. During rule development, new information may become available regarding the availability of control technologies, emission reduction potential, costs of measures, and other factors. Consequently, the scheduling of rule adoption hearings, the estimated emission benefits, and the cost effectiveness may ultimately differ from that identified in the RAQS Revision.

2. AIR QUALITY IMPROVEMENT

2.1 OZONE AIR QUALITY TRENDS

State law requires a triennial assessment of ozone air quality improvement achieved during the preceding three years, based on ambient pollutant measurements and air quality indicators (statistically derived values based on monitored air quality data). Measurements of ambient air pollution, including ozone, are collected continuously at nine sites throughout the region to identify the status and trend of ambient air quality. The resulting data indicate that San Diego County's air quality has substantially improved over the past two decades due to emission control efforts, despite continued growth in population and motor vehicle usage. In fact, San Diego County is among the most improved in the state for reducing exceedances of the state one-hour ozone standard.

Major air quality milestones were achieved in 2001 and 2011. Specifically, the region attained the former national one-hour ozone standard in 2001,[1] and attained the former national eight-hour ozone standard in 2011.[2] Ozone air quality has continued to improve through 2013, which was the cleanest year on record. Unusually warm weather in 2014 and 2015 resulted in slight ozone concentration increases compared to 2013 levels, despite ongoing reductions in ozone-forming emissions.

In 2005, ARB established the current state eight-hour average standard of 0.070 ppm while retaining the current 0.090 ppm state one-hour ozone standard. In 2008, the EPA established the current national eight-hour ozone standard of 0.075 ppm.[3] San Diego County's progress in meeting these standards is presented in Table 1 and Figure 1, which identify the number of days these standards were exceeded between 1977 (the earliest year with comparable data) and 2015.

The state one-hour ozone standard was exceeded on 168 days in 1977, but improved significantly to just three days over that standard in 2015 (a 98% improvement). Over the same 38-year period (1977-2015), the region's population grew by 88% (from 1.7 million to 3.2 million) and daily motor vehicle mileage more than doubled (from 34 million to 75 million miles). This air quality improvement despite regional growth clearly shows emission control measures are working.

Notwithstanding this progress, current state and federal ozone standards are not yet attained, and continued emission reduction efforts are needed. Moreover, projected increases in motor vehicle

[1] The 1979 national one-hour ozone standard was 0.120 ppm averaged over one hour and was attained when each monitor had no more than three exceedances over a three-year period. The EPA revoked this standard in 2005.

[2] The 1997 national eight-hour ozone standard was 0.08 ppm and was attained when the three-year average of the annual 4th-highest daily maximum eight-hour average ozone concentration at each monitor did not exceed it. The EPA revoked this standard in 2015.

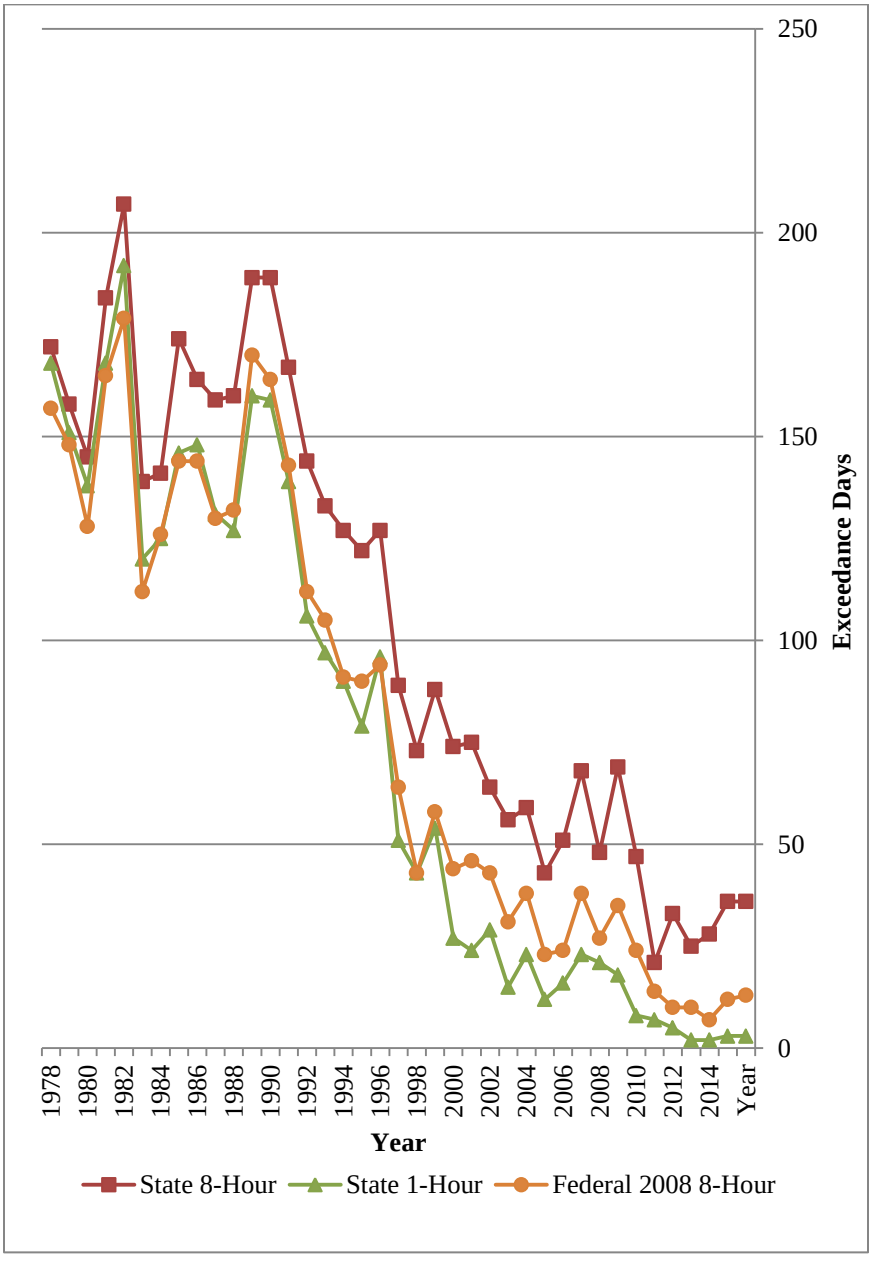
[3] The EPA established a more health-protective eight-hour ozone standard of 0.07 ppm in 2015, but this new standard is not fully implemented yet.

usage, along with population and industrial growth,[1] means there will be significant challenges to reduce emissions as the District acts to maintain and further improve air quality.

Table 1 and Figure 1
Days Exceeding Air Quality Standards for Ozone
San Diego County, 1977-2015

Year	State		Federal
	8-Hour	1-Hour	2008 8-Hour
2015	36	3	13
2014	36	3	12
2013	28	2	7
2012	25	2	10
2011	33	5	10
2010	21	7	14
2009	47	8	24
2008	69	18	35
2007	48	21	27
2006	68	23	38
2005	51	16	24
2004	43	12	23
2003	59	23	38
2002	56	15	31
2001	64	29	43
2000	75	24	46
1999	74	27	44
1998	88	54	58
1997	73	43	43
1996	89	51	64
1995	127	96	94
1994	122	79	90
1993	127	90	91
1992	133	97	105
1991	144	106	112
1990	167	139	143
1989	189	159	164
1988	189	160	170
1987	160	127	132
1986	159	131	130
1985	164	148	144
1984	174	146	144
1983	141	125	126
1982	139	120	112
1981	207	192	179
1980	184	168	165
1979	145	138	128
1978	158	151	148
1977	172	168	157

Note: Table indicates the number of days when any monitoring station in the County recorded an exceedance of the indicated standard.



[1] Between 2012 and 2050, the region's population is forecasted to increase by 29% (from 3.1 million to 4.0 million) and employment by 34% (from 1.3 million to 1.8 million) according to SANDAG's Draft "San Diego Forward" Regional Plan (April 2015), and vehicle miles traveled (VMT) by 39% (from 72 million to 100 million) according to ARB EMFAC 2014 data.

2.2 AIR QUALITY INDICATORS

Three statistical indicators are used to assess air quality improvement for ozone based on the monitored air quality data. These are: (1) population-weighted ozone exposure, (2) area-weighted ozone exposure, and (3) the Expected Peak Day Concentration (EPDC). The ARB computed each indicator for San Diego County based on monitored air quality data, comparing a three-year base period to a three-year end period.[1] The indicators are averaged over three years to moderate the influence of year-to-year meteorology changes (over which the area has no control) and to better represent trends.

2.2.1 Exposure Indicators

Population-weighted ozone exposure reflects the potential average outdoor exposure per person to concentrations above the state one-hour ozone standard. It is reported in terms of parts per million–hours (ppm-hours) for each year. Population-weighted ozone exposure is a good indicator of the extent and severity of the ozone problem for human health because it indicates whether relatively few people or many people are being exposed to unhealthful ozone levels, and for how long.

Area-weighted ozone exposure is similar except that it indicates whether relatively small areas of the region, or large areas, are being exposed to unhealthful ozone levels. The area-weighted exposure is an indicator of the exposure of crops and vegetation to the damaging effects of ozone.

Population-weighted and area-weighted ozone exposure indicators are presented in Table 2. Population and area-weighted exposure to unhealthy ozone levels for the state one-hour ozone standard were reduced by more than 99% between 1986-1988 and 2012-2014, indicating substantial improvement resulting from effective emission control measures. Progress also occurred in population and area-weighted exposures relative to the state eight-hour ozone standard, demonstrating over 77% and 84% improvements, respectively, between 2006-2008 and 2012-2014.

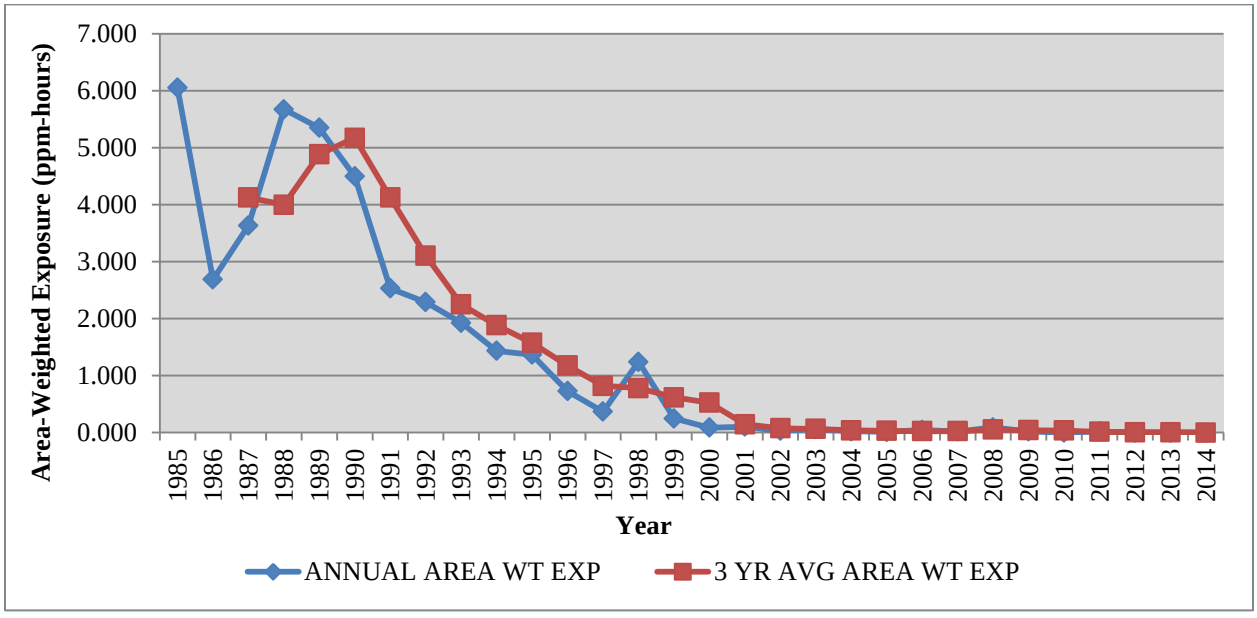
[1] The three-year base period is 1986-1988 for the state one-hour or 2006-2008 for the state eight-hour for exposure indicators, and 1990-1992 for EPDC. No state eight-hour exposure indicator data is available prior to 2006 because ARB approved the state eight-hour ozone standard in 2005. The three-year end period is 2012-2014 for both the exposure indicators and the EPDC. Data from 2015 was not available at time of document preparation.

Table 2
Ozone Exposure Indicators

Type of Exposure	Base Period 1986-1988	End Period 2012-2014	Difference (Base - End)	Percent Improvement
One-hour - Population-weighted (ppm-hours)	1.0899	0.0004	1.0895	99.9%
One-hour - Area-weighted (ppm-hours)	3.9967	0.0002	3.9965	99.9%
Type of Exposure	**Base Period 2006-2008**	**End Period 2012-2014**	**Difference (Base - End)**	**Percent Improvement**
Eight-hour - Population-weighted (ppm-hours)	0.203	0.046	0.157	77.3%
Eight-hour - Area-weighted (ppm-hours)	0.633	0.098	0.535	84.5%

Additionally, the trends in annual and three-year rolling averages of the population-weighted and area-weighted ozone exposure indicators are presented in Figures 2, 3, 4, and 5 respectively. After a brief period of increase in the late 1980s, indicating the need for additional emission reductions, exposure was rapidly reduced in the early 1990s with implementation of many new District stationary-source and area-source rules,[1] coupled with state requirements for low-emission vehicles and cleaner-burning gasoline. Since 1996, as ozone levels have approached the state one-hour and eight-hour standards, improvement has continued more gradually.

Figure 2
Area-Weighted Ozone Exposure – State One-Hour



[1] The District has regulatory authority over some area-wide sources, including coatings and industrial solvents.

Figure 3
Population-Weighted Ozone Exposure – State One-Hour

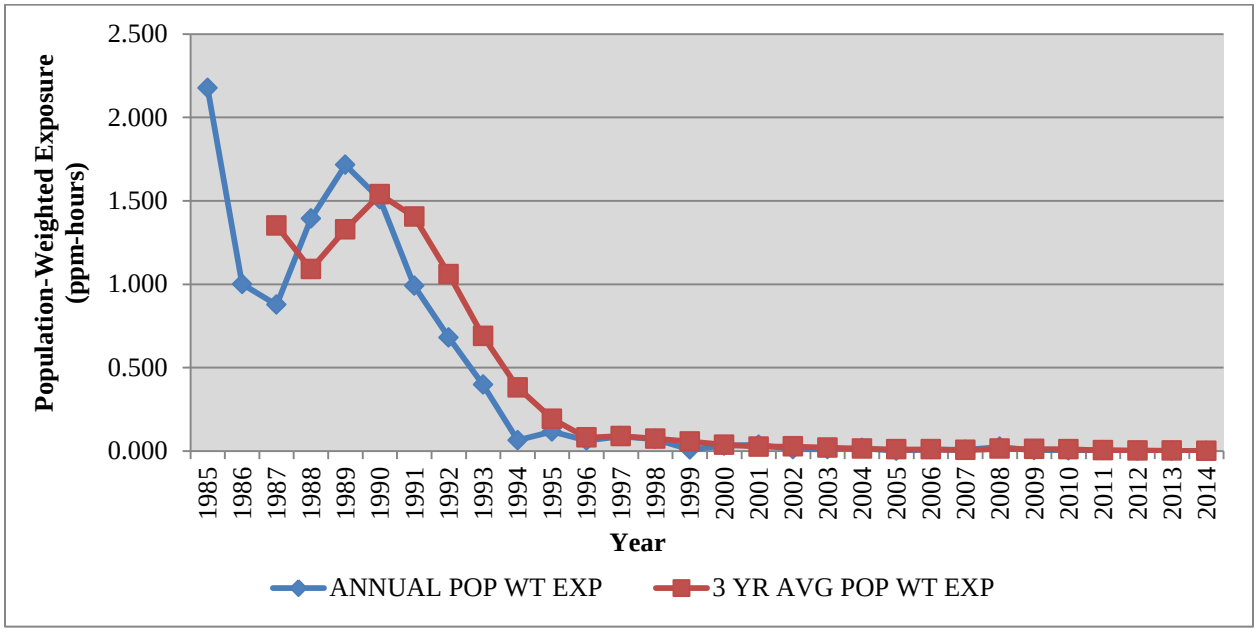


Figure 4
Area-Weighted Ozone Exposure – State Eight-Hour

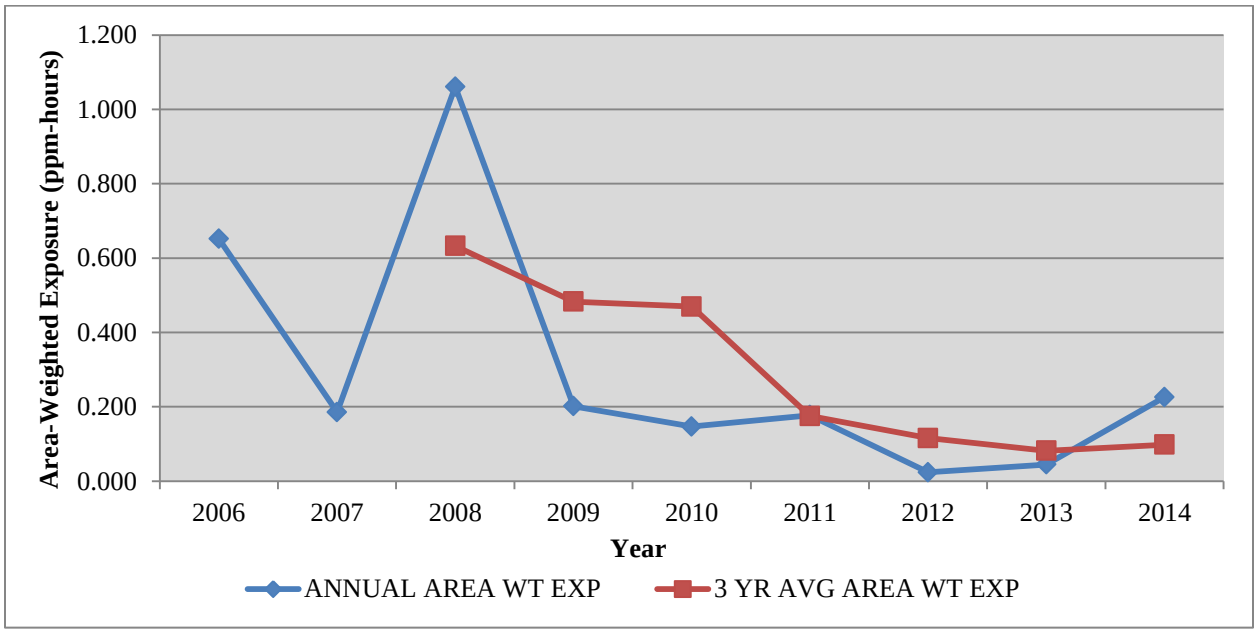
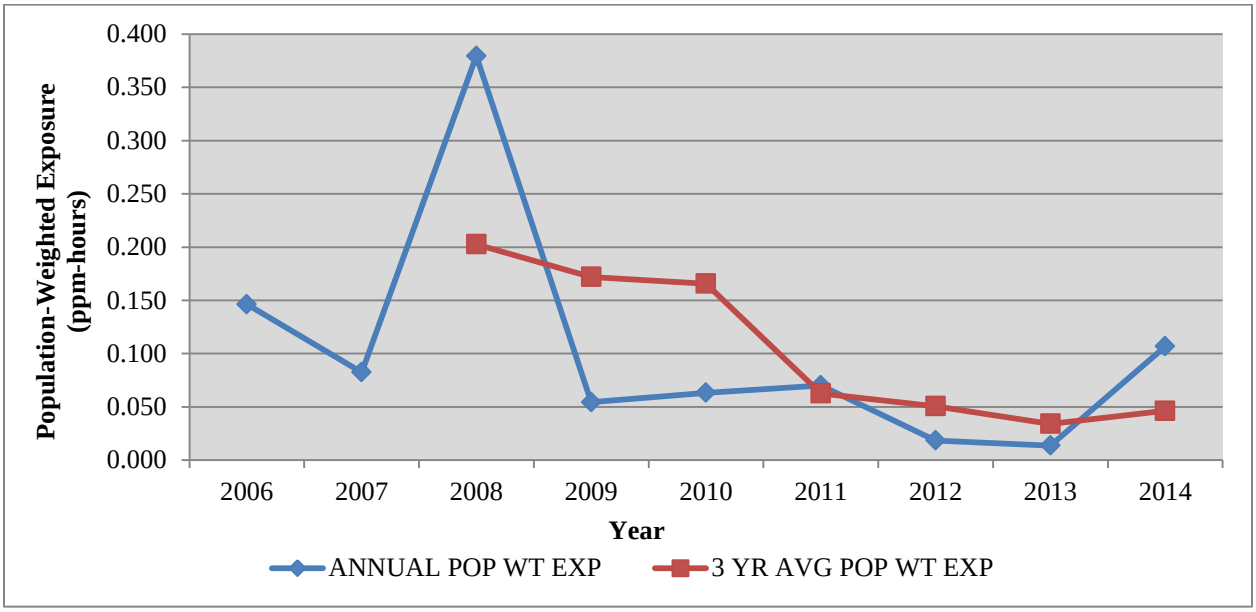


Figure 5
Population-Weighted Ozone Exposure – State Eight-Hour



2.2.2 Expected Peak Day Concentration (EPDC)

The EPDC is used for tracking progress in reducing daily maximum one-hour and eight-hour ozone concentrations at each monitoring site. This indicator represents the potential worst-case one-hour or eight-hour exposure to ozone and associated acute adverse health impacts. The EPDC differs from the exposure indicators because it does not consider the size of the population or area being exposed.

Progress in reducing the EPDC is displayed in Table 3 for the five monitoring sites in San Diego County that have been operating since a 1990-1992 base period for the one-hour and eight-hour standards.

Table 3
Expected Peak Day Concentration of Ozone (ppm)

Site	Base Period 1990-1992		End Period 2012-2014		Difference (Base - End)		Percent Improvement	
	1-hour	8-hour	1-hour	8-hour	1-hour	8-hour	1-hour	8-hour
Alpine - Victoria Drive	0.168	0.141	0.098	0.088	0.070	0.053	41.7%	37.6%
Escondido - East Valley Parkway	0.156	0.119	0.087	0.077	0.069	0.042	44.2%	35.3%
El Cajon - Redwood Avenue	0.147	0.118	0.087	0.077	0.060	0.041	40.8%	34.7%
Chula Vista - East J Street	0.144	0.113	0.080	0.070	0.064	0.043	44.4%	38.1%
Del Mar - Mira Costa College	0.166	0.131	0.081	0.072	0.085	0.059	51.2%	45.0%

The most substantial air quality improvements occurred at the Del Mar monitoring site for both the one-hour and eight-hour standards. Peak ozone levels at Del Mar decreased over 51% for the one-hour standard, and 45% for the eight-hour standard. The reduction in peak ozone levels at coastal sites like Del Mar is due in part to the reduced air pollution transported over the ocean from the South Coast Air Basin, located immediately north of the San Diego region. Reductions in peak ozone levels further inland were also significant. For example, the El Cajon monitoring site experienced the lowest percent improvement among all five sites, but the reductions in peak ozone levels were still substantial at more than 40% for one-hour levels and 34% for eight-hour levels. The Alpine monitoring site, which typically encounters the highest ozone levels in the County, also experienced reductions of similar magnitude. Notwithstanding the substantial improvement, the Alpine site had the highest ozone concentrations in the 1990-1992 base period and the 2012-2014 end period for both the one-hour and eight-hour standards.[1]

Site-specific ozone EPDC trends at each of the long-term monitoring sites are presented in Attachment I (Figures I-1 through I-5). The charts present annual data back to the first year for which data are available for each site, and show ongoing improvement at all sites, with steady improvement occurring since 1990.

[1] Alpine is downwind of the denser metropolitan areas and major transportation corridors of the San Diego region. Emissions from these sources are blown inland by the onshore breeze to the mountain slopes where Alpine is located. During this transport of pollution, the emissions have time to react under sunlight and heat to form ozone, which gets trapped below a naturally occurring thermal inversion layer and causes ozone levels to rise.

3. EMISSION REDUCTION PROGRESS

3.1 COUNTYWIDE EMISSION REDUCTION RATES

As shown in Table 4, VOC and NOx emissions were reduced by larger percentages over the 2007-2014 period than were projected in the 2009 RAQS Revision. Updated emissions inventory data indicate that countywide daily VOC emissions decreased by 28 tons (from 116 tons to 88 tons) between 2007 and 2014, a 3.9% average annual reduction compared to the previously projected 2.1% average annual reduction. Daily NOx emissions decreased by 64 tons (from 160 tons to 96 tons), a 7.0% average annual reduction compared to the previously projected 1.9% average annual reduction.

Table 4
Rates of Emission Reduction, VOC & NOx*,**
2007-2014 (tons/day)

Pollutant	2007	2008	2009	2010	2011	2012	2013	2014	Annual Average Rate of Reduction 2007-2014	2009 RAQS Expected Rate of Reduction†
VOC Stationary	31.97	31.34	30.91	30.68	30.46	30.27	30.72	31.25	-0.3%	
% Reduction	--	-1.9%	-1.4%	-0.7%	-0.7%	-0.6%	1.5%	1.7%		
VOC Mobile	84.75	77.89	75.42	71.55	68.90	65.51	61.52	57.08	-5.5%	
% Reduction	--	-8.1%	-3.2%	-5.1%	-3.7%	-4.9%	-6.1%	-7.2%		
VOC Total	116.72	109.24	106.32	102.24	99.36	95.78	92.24	88.33	-3.9%	-2.1%
% Reduction	--	-6.4%	-2.7%	-3.9%	-2.8%	-3.6%	-3.7%	-4.2%		
NOx Stationary	6.34	5.37	4.87	4.53	4.49	4.48	4.51	4.43	-4.8%	
% Reduction	--	-15.4%	-9.3%	-6.9%	-1.0%	-0.2%	0.7%	-1.8%		
NOx Mobile	153.87	140.83	128.69	121.59	116.29	108.61	100.96	91.64	-7.1%	
% Reduction	--	-8.5%	-8.6%	-5.5%	-4.4%	-6.6%	-7.0%	-9.2%		
NOx Total	160.21	146.19	133.56	126.13	120.78	113.09	105.47	96.07	-7.0%	-1.9%
% Reduction	--	-8.8%	-8.6%	-5.6%	-4.2%	-6.4%	-6.7%	-8.9%		

* Source: ARB California Emissions Projection Analysis Model (CEPAM) emissions inventory, Version 1.04.
** Negative percentages indicate emission reductions; positive percentages indicate increases.
† Derived from emissions data in 2009 RAQS Revision (Attachment II, Tables II-16 and 17).

3.2 COUNTYWIDE EMISSION TRENDS AND PROJECTIONS

3.2.1 Overall Progress

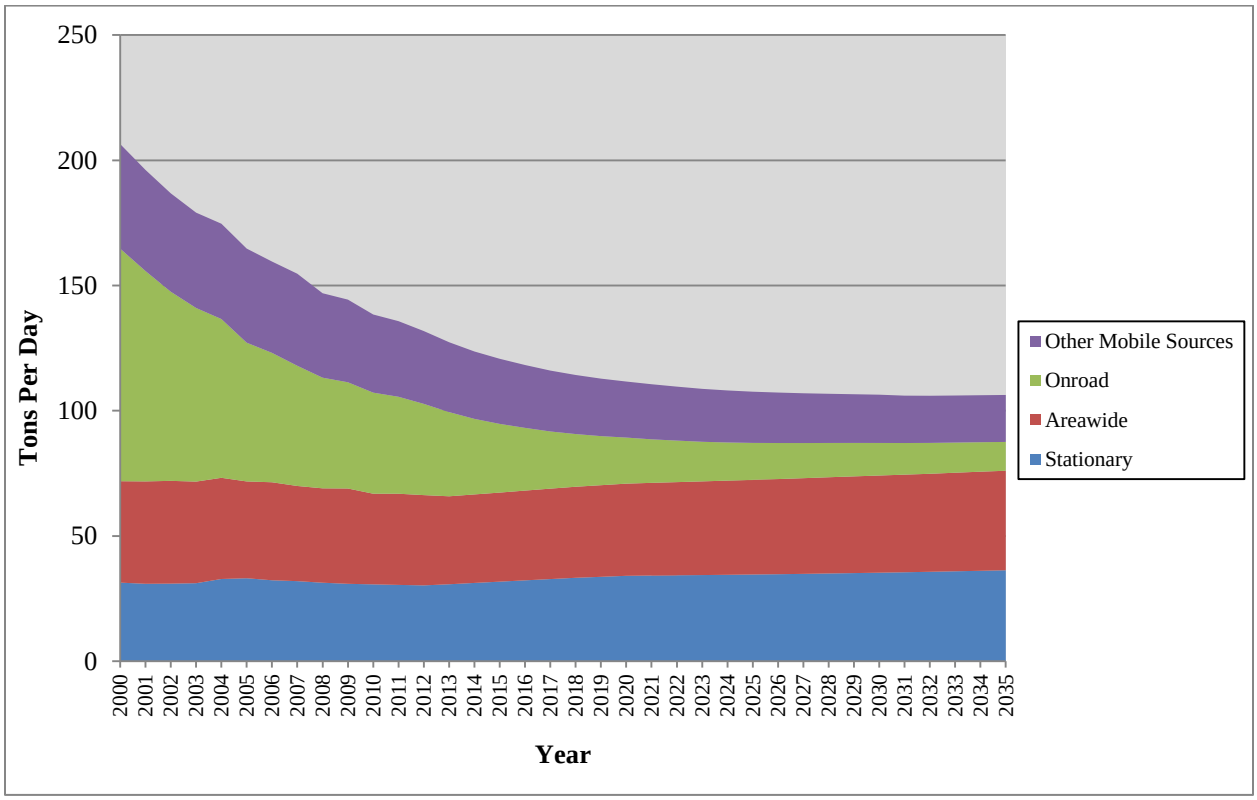
VOC emission trends from 2000 through 2035 are presented in Table 5 and Figure 6; and NOx emission trends in Table 6 and Figure 7.[1] Between 2012 and 2015, total emissions were reduced at an average annual rate of 2.9% for VOC and 7.7% for NOx. Based on regulatory actions already taken, total VOC and NOx emissions are expected to continue decreasing through 2035 due to ongoing implementation of existing local stationary source rules, as well as state and federal mobile source regulations. Projections of future emissions are based on currently adopted control measures and growth forecasts and do not reflect the emission benefits of rules that are not yet adopted (such as those scheduled in this RAQS Revision for possible adoption during the 2017 time period).

[1] Source: ARB California Emissions Projection Analysis Model (CEPAM) emissions inventory, Version 1.04.

Table 5
VOC Emission Trends[1]
(tons/day)

Sources	2000	2005	2010	2015	2020	2025	2030	2035
Stationary Sources	31	33	31	32	34	35	35	36
Areawide Sources	40	39	36	36	37	38	39	40
On-Road Motor Vehicles	93	55	40	27	18	15	13	12
Other Mobile Sources	42	38	31	26	22	21	19	19
Total	206	165	138	121	111	109	107	107

Figure 6
VOC Emission Trends[1]
(tons/day)

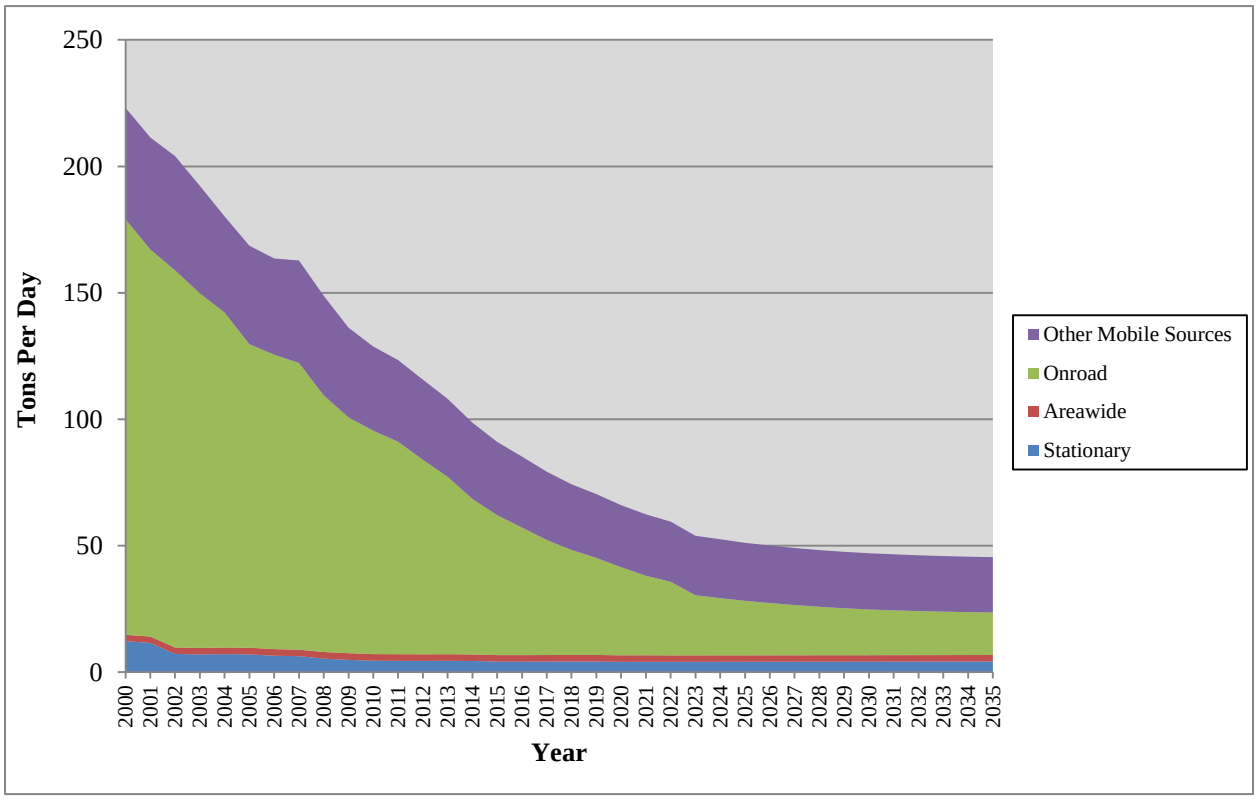


[1] Source: ARB California Emissions Projection Analysis Model (CEPAM) emissions inventory, Version 1.04.

Table 6
NOx Emission Trends[1]
(tons/day)

Sources	2000	2005	2010	2015	2020	2025	2030	2035
Stationary Sources	12	7	5	4	4	4	4	4
Areawide Sources	3	3	3	3	3	3	3	3
On-Road Motor Vehicles	164	120	88	55	35	22	18	17
Other Mobile Sources	44	39	33	29	25	23	22	22
Total	223	169	129	91	67	52	47	46

Figure 7
NOx Emission Trends[1]
(tons/day)



[1] Source: ARB California Emissions Projection Analysis Model (CEPAM) emissions inventory, Version 1.04.

4. RE-EVALUATION OF ALL FEASIBLE MEASURES FOR STATIONARY SOURCES

The District previously adopted and continues to implement dozens of health-protective VOC and NOx emission control rules addressing all significant stationary source categories in San Diego County. Nevertheless, additional feasible control measures eventually become available as regulatory programs move forward, control technologies improve, or control costs are reduced. State law requires plan updates to include an updated schedule for expeditiously adopting feasible control measures for ozone-precursor emission sources under an air district's purview.[1]

4.1 RAQS IMPLEMENTATION PROGRESS SINCE 2009

The status of the control measures identified in the 2009 RAQS Revision for possible adoption as rules, if feasible, as well as other control measures adopted as rules since 2009, are summarized in Table 7. A discussion of each measure and its status follows Table 7.

[1] "Feasible Measure" is not defined in the CCAA. However, the statutory criteria for assessing a potential control measure include cost-effectiveness, technological feasibility, total emission reduction potential, rate of emission reduction, public acceptability, and enforceability (H&SC §40922(a)). Similarly, transport mitigation regulations (17 CCR §§70600-01) define "all feasible measures" based on the "maximum degree of reductions achievable for emissions of ozone precursors, taking into account technological, social, environmental, energy and economic factors, including cost-effectiveness."

TABLE 7
STATUS OF 2009-2016 CONTROL MEASURES

Pollutant/ Control Measure	2009 RAQS Adoption Schedule	2016 RAQS Status	Year of Full Implement-ation	2009 RAQS Expected Emission Reductions (tons/day)*	2016 RAQS Revised Emission Reductions (tons/day)*	Estimated Cost-Effectiveness ($/lb)*
VOC/Further Control of Solvent Cleaning (Replace Rule 66 with new/amended Rule 66.1)	2009	Adopted 2/24/10 Amended 05/11/16	2011 2017	0.57 N/A	0.02 0.03	3.30 0
VOC/Further Control of Architectural Coatings (Replace Rule 67.0 with new Rule 67.0.1)	2010	Adopted 06/24/15	2016	2.25	2.3	1.12
VOC/Further Control of Wood Coatings (Amend Rule 67.11 and Repeal Rule 67.11.1)	Medium Priority	Adopted 06/27/12	2013	0.25	0.05	0.51 to 1.78
VOC/Further Control of Polyester Resin Operations (Replace Rule 67.12 with new Rule 67.12.1)	N/A	Adopted 05/11/16	2017	N/A	0.01	0.1
VOC/Further Control of Graphic Arts Operations (Amend Rule 67.16)	Medium Priority	Adopted 11/9/11	2012	0.23	0.02	1.10
VOC/Further Control of Automotive Refinishing (Replace Rule 67.20 with new Rule 67.20.1)	2009	Adopted 06/30/10	2011	0.6	1.01	1.30 to 2.50
NOx/Small Boilers, Process Heaters, and Steam Generators Between 600,000 and 2 million BTU/hour (Adopt new Rule 69.2.1)	2009	Adopted 03/25/09	2030	0.18	0.18	4.04
NOx/Medium Boilers, Process Heaters, and Steam Generators Between 2 million and 5 million BTU/hour (Adopt new Rule 69.2.2)	2009	Delayed until cost-effective	20 years after adoption	0.20	0.25	Delayed until cost-effective
NOx/Further Control of Stationary Combustion Turbines (Amend Rule 69.3.1)	2009	Adopted 02/24/10	2015	0.19 avg 1.65 peak	0.002 avg 1.65 peak	5.50
NOx/Further Control of Residential Water Heaters Smaller Than 75,000 BTU/hour (Replace Rule 69.5 with new Rule 69.5.1)	Delayed pending technology availability	Adopted 06/24/15	2028	0.7	1.04	4.50

* Estimated emission reductions and cost-effectiveness are subject to refinement during rule development.

4.1.1 Further Control of Solvent Cleaning (Adopted new Rule 66.1 and repealed Rule 66)

Solvent cleaning (also called surface preparation or solvent wipe cleaning) is a method of cleaning a surface by physically rubbing it with a material such as a rag wetted with solvent, which results in VOC emissions. Solvent cleaning operations that are not covered by source-specific rules were regulated under former District Rule 66 (Organic Solvents, repealed effective February 24, 2011) and now under new Rule 66.1 (Miscellaneous Surface Coating Operations and Other Processes Emitting Volatile Organic Compounds, adopted on February 24, 2010). New Rule 66.1 regulates VOC emissions from miscellaneous surface coating operations and miscellaneous VOC emitting processes, including industrial solvent use that is not regulated by other District rules.

Former Rule 66 did not limit the VOC content of cleaning solvents. With the adoption of Rule 66.1 and requiring use of cleaning solvents with a VOC content not exceeding 50 grams per liter of material, the estimated emission reductions for this source category are 9.1 tons of VOC per year (0.02 tons per day). This is consistent with the standards for this source category in the rules of several other air districts.

The District amended Rule 66.1 on May 11, 2016, modifying exemption thresholds for facility-wide solvent cleaning operations. The adopted rule amendments are estimated to reduce VOC emissions by 12.7 tons per year (0.03 tons per day). Compliant solvent cleaning materials are widely available and equally priced, or marginally less expensive; thus, cost-effectiveness at the time of adoption was estimated at $0 per pound of VOC reduced.

4.1.2 Further Control of Architectural Coatings (Adopted Rule 67.0.1 and repealed Rule 67.0)

Architectural coatings include a variety of residential, commercial and industrial paints, primers, sealers and other coatings which, when applied, emit VOCs. Architectural coatings were previously regulated under former District Rule 67.0 (Architectural Coatings, repealed effective January 1, 2016) and are now regulated under Rule 67.0.1 (Architectural Coatings, adopted on June 24, 2015). Rule 67.0.1 incorporates the tighter VOC limits of the ARB's 2007 Suggested Control Measures and is estimated to reduce VOC emissions in San Diego County by 839.5 tons per year (2.3 tons per day) with a cost-effectiveness of $1.12 per pound of VOC reduced.

4.1.3 Further Control of Wood Products Coating Operations (Amended Rule 67.11 and repealed Rule 67.11.1)

Wood coatings include a variety of primers, stains, sealers, and varnishes which, when applied to wood products such as cabinets and furniture, release VOC emissions. Historically, this source category was regulated under District Rules 67.11 (Wood Products Coating Operations) and 67.11.1 (Large Coating Operations for Wood Products). Rule 67.11 was updated on June 27, 2012, to establish tighter VOC limits for specified wood coatings; Rule 67.11.1 was duplicative of amended Rule 67.11 and therefore was repealed. The adopted rule amendments are estimated to reduce VOC emissions by 19 tons per year (0.05 tons per day), with a cost-effectiveness ranging between $0.51 to $1.78 per pound of VOC reduced.

4.1.4 Further Control of Polyester Resins (Adopted new Rule 67.12.1 and repeal of Rule 67.12)

Polyester resin materials are gel coats, resins, and cleaning solvents used in the manufacture of aerospace components, synthetic marble products, surfboards, boats and other products. Polyester resin operations release VOC emissions and are currently regulated under Rule 67.12 (Polyester Resin Operations, to be repealed effective May 11, 2017). Rule 67.12 is being replaced by new Rule 67.12.1 (Polyester Resin Operations, adopted on May 11, 2016), which requires lower-emitting materials. The new rule is estimated to reduce VOC emissions by 4.0 tons per year (0.01 tons per day) with a cost-effectiveness of $0.10 per pound of VOC reduced.

4.1.5 Further Control of Graphic Arts Operations (Amended Rule 67.16)

Graphic arts operations involve the use of inks, cleaning solvents, and other materials in the printing and publishing industry. These operations are a source of VOC emissions and are regulated under Rule 67.16 (Graphic Arts Operations). Rule 67.16 was updated on November 9, 2011, to establish tighter VOC limits. The amended rule is estimated to reduce VOC emissions by 10.5 tons per year (0.02 tons per day), with an estimated cost-effectiveness of $1.10 per pound of VOC reduced.

4.1.6 Further Control of Automotive Refinishing (Adopted new Rule 67.20.1 and repealed Rule 67.20)

Automotive coatings include a variety of primers, clear coatings, and color coatings used in motor vehicle or mobile equipment refinishing operations. These operations are a source of VOC emissions and were previously regulated under former District Rule 67.20 (Motor Vehicle and Mobile Equipment Refinishing Operations, repealed effective June 30, 2011) and are now regulated under Rule 67.20.1 (Motor Vehicle and Mobile Equipment Coating Operations, adopted on June 30, 2010). Rule 67.20.1 includes the tighter VOC limits of ARB's 2005 SCM for Automotive Coatings and is estimated to reduce VOC emissions by 370 tons per year (1.01 tons per day) with a cost-effectiveness averaging between $1.30 to $2.50 per pound of VOC reduced.

4.1.7 New Small and Medium Boilers, Process Heaters and Steam Generators (Adopted new Rule 69.2.1 and further evaluating possible new Rule 69.2.2)

Boilers, process heaters, and steam generators combust fuel and are a source of NOx emissions. The 2009 RAQS Revision included a control measure that would apply NOx control requirements to units with a heat input rating smaller than 5 million BTU/hour (larger units are already regulated under existing Rule 69.2). Some California air districts regulate new units smaller than 2 million BTU/hour at the point of manufacture (i.e., manufacturers must certify that their units meet NOx emission standards), and larger units at the point of use (operators must obtain and comply with a permit to operate). Accordingly, the District addressed the measure by considering development of two separate new rules. Control requirements for small boilers between 600,000 and 2 million BTU/hour were determined feasible and were ultimately adopted as Rule 69.2.1. However, control requirements for medium boilers between 2-5 million

BTU/hour have been delayed due to insufficient cost-effectiveness results. Additional information is provided below.

New Small Boilers (Adopted Rule 69.2.1)
Rule 69.2.1 (Small Boilers, Process Heaters, and Steam Generators) was adopted on March 25, 2009 and became effective on March 25, 2010. The rule controls NOx emissions from new units rated between 600,000 and 2 million BTU/hour. Upon full implementation, when all conventional boilers have been replaced at the end of their estimated 20-year lifespan, Rule 69.2.1 is estimated to reduce NOx emissions by 64.6 tons per year (0.18 tons per day), with an average cost-effectiveness of $4 to $6 per pound of NOx reduced, depending on the size of the new unit.

Medium Boilers (Possible new Rule 69.2.2 on hold due to infeasibility)
There are an estimated 500 boilers rated between 2-5 million BTU/hour in San Diego County, cumulatively emitting an estimated 200 tons per year of NOx. Possible NOx control requirements (similar to those in Rule 69.2.1) for boilers in this size range were evaluated in 2011-12 and determined infeasible due to poor cost-effectiveness.

Some air districts with worse air quality and more demanding requirements for emission reductions have implemented NOx regulatory controls on boilers in this size range. Control costs may have dropped over time as a result; therefore, the District will further evaluate the feasibility of a possible rule to control NOx emissions from such boilers in San Diego County. This could include a possible requirement that boiler manufacturers certify new units as meeting a specified NOx emission limit (e.g., 30 parts per million by volume) or that operators of existing units obtain a District permit. Based on a preliminary evaluation, this measure could reduce NOx emissions by an estimated 89.5 tons per year (0.25 tons per day).

4.1.8 Further Control of Stationary Combustion Turbines (Amended Rule 69.3.1)

Combustion turbines are a source of NOx emissions and are regulated under District Rule 69.3.1 (Stationary Gas Turbine Engines – Best Available Retrofit Control Technology). The rule was updated on February 24, 2010, to restrict aggregate daily NOx emissions from turbines operating less than 877 hours per year. The restriction occurs on days with forecasted high ozone concentrations unless turbines comply with a more stringent NOx emission standard, or when there is an electrical grid emergency requiring their use. The amended rule is estimated to reduce NOx emissions by as much as 602.3 tons per year (1.65 tons per day) during peak operations, with a cost-effectiveness of $5.50 per pound of NOx reduced.

4.1.9 Further Control of Residential Water Heaters (Adopted new Rule 69.5.1 and repealed Rule 69.5)

Residential water heaters combust fuel and are a source of NOx emissions. Units were previously regulated under District Rule 69.5 (Natural Gas-Fired Water Heaters, repealed effective July 1, 2016) and are now regulated under Rule 69.5.1 (Natural Gas-Fired Water Heaters). Rule 69.5.1 includes a more stringent 10 nanogram/Joule NOx emissions limit similar to a comparable SCAQMD rule. Upon full implementation, when all conventional water heaters have been replaced at the end of their estimated 12-year lifespan, Rule 69.5.1 is estimated to

reduce NOx emissions by approximately 365 tons per year (1.0 ton per day), with an average cost-effectiveness of approximately $4.50 per pound of NOx reduced.

4.2 FURTHER STUDY MEASURES IDENTIFIED IN 2009 RAQS REVISION

To ensure that the RAQS continues to include every feasible control measure applicable to sources under the District's authority (as required by state law), the District reviewed the adopted rules of other California air districts to determine if there are any other feasible control measures to incorporate into the RAQS. Control measures that were determined to have sizable, cost-effective emission reduction potentials were previously identified in Table 7, and most were already determined to be feasible and thus were developed and adopted as rules.

For remaining measures that were identified in the 2009 RAQS Revision and found not to be feasible, or were not previously identified, a detailed analysis was conducted to assess the number and nature of the affected sources, their emissions, technological feasibility, cost-effectiveness, and emission reduction potential. The measures are listed in Table 8.

Table 8
Evaluation of Further Study Measures Identified in 2009 RAQS Revision

Control Measure	2009 RAQS Estimated Emission Reduction Potential (Tons/Day)	2009 RAQS Priority	2016 RAQS Estimated Emission Reduction Potential	2016 RAQS Priority
High Emitting Spray Booth Facilities	0.15	Low to Medium	0	No Further Evaluation
Equipment Leaks	Not Available	Low	Not Available	No Further Evaluation

4.2.1 High Emitting Spray Booth Facilities *(No Further Evaluation)*

SCAQMD Rule 1132 (Further Control of VOC Emissions from High-Emitting Spray Booth Facilities) applies to spray booths emitting more than 20 tons of VOC per year. This rule requires a further 65% emission reduction of VOC from these operations beyond that required by other SCAQMD coating rules. The District currently has no comparable rule. Recent District emission inventory data indicate there is one facility in San Diego County for which VOC emissions from one spray booth (or a combination of spray booths) exceed 20 tons per year. VOC emissions from this facility are approximately 107 tons per year. However, only 25% of those emissions (approximately 27 tons per year) are from coatings specifically applied in a spray booth. The remainder of emissions emanate from area sources, which are coatings applied to large vessels where no spray booth could reasonably accommodate their large size. The facility has voluntarily installed controls on all seven spray booths with a control efficiency of 95%. Additionally, the coatings being applied are controlled through other existing state and local measures.

Since controls are already installed on all facilities, there are no additional emission reductions that could be obtained by adopting a similar measure in San Diego County. As such, no further evaluation of this source category is necessary at this time.

4.2.2 Equipment Leaks *(No Further Evaluation)*

BAAQMD Rule 8-18 (Equipment Leaks) includes vapor and liquid leak standards to reduce VOC emissions from leaking equipment at refineries, bulk terminals, bulk plants and chemical plants. The 2009 RAQS Revision identified a possible similar rule for San Diego County as a low priority item due to the limited emission reduction potential. An analysis of feasibility concluded that small reductions in VOC emissions and poor cost-effectiveness would be expected, making a similar rule infeasible to implement in San Diego County, as explained below.

Rule 8-18 exempts numerous facilities, including those with fewer than 100 valves or ten pumps and compressors. The rule also exempts equipment handling organic liquids having initial boiling points above 302º F. Rule 8-18 does not apply to connections between the loading racks at bulk terminals and bulk plants and the vehicle (mobile transports) being loaded. Other requirements of the rule include inspection frequency criteria (daily visual, quarterly instrument checks for most components), repair requirements, and leak standards.[1]

The Rule 8-18 definition of chemical plants includes any facility engaged in producing organic or inorganic chemicals or the manufacturing of products by chemical processes and having "325" as the first three digits in the applicable NAICS code. This NAICS code applies to dozens of facilities in San Diego County, but few have 100 or more valves or ten or more pumps or compressors in VOC service. San Diego County has no petroleum refineries that would be subject to such a rule. Possibly, a comparable rule in San Diego County could apply to the major gasoline bulk terminals, some of the bulk plants, and one kelp-processing facility. However, a valve, pump and compressor count would be needed to determine if such a rule would apply to these facilities.

Existing District rules have the same liquid leak standard (three drops per minute) as Rule 8-18.[2] However, the District rules have a shorter allowable leak repair period than Rule 8-18 (zero to three days versus seven days). Rule 8-18 has a more stringent vapor leak standard for equipment at bulk terminals and bulk plants than do District Rules 61.1 and 61.2 (100-500 ppmv @1.0 cm versus 1375 ppmv @1.3 cm as methane). However, District Rule 61.1 applies to the vapor transfer path including the connection to a mobile transport while BAAQMD Rule 8-18 specifically exempts such connections. District Inspectors generally do not find vapor leaks at the bulk terminals and bulk plants along the hard-piped components. Typically, if vapor leaks are found, it is at the loading rack/mobile transport interface, and from the vapor fittings (e.g., drybreaks) on the mobile transport themselves.

[1] Three drops per minute for liquid leaks, 100 ppmv as methane for most vapor leaks, and 500 ppmv as methane for pumps, compressors and pressure relief devices.

[2] These District rules include 61.1, 61.2, 61.7, 67.10, 67.15, and 67.19.

The most recent inventory of these sources showed approximately 12 tons per year of total VOC emissions from loading rack operations. Fugitive vapor and liquid leak emissions emanating from hard-piped components, pumps and compressors comprise only seven tons of VOC per year. Furthermore, fugitive vapor emissions from operations subject to Rule 67.10 (kelp processing) have drastically declined since 2013 because of plant process changes and refined calculation methods. Lines used to transport VOC/air streams within the kelp processing facility are operated at only a few inches of water gauge pressure. It is anticipated that requiring additional requirements to control leaks from these facilities would not be cost-effective because of the low emission reduction potential.

Based on this evaluation, no further evaluation of this source category is necessary at this time.

4.3 EVALUATION OF FUTURE FEASIBLE MEASURES

The District has identified seven additional control measures that are scheduled in this RAQS Revision for further evaluation and, if warranted, development and consideration of adoption as rules during the next three years. Two of these seven measures were previously considered for adoption and were subsequently delayed, but will now be re-evaluated.[1] Preliminary estimates indicate these seven measures could reduce NOx emissions by approximately 1.2 tons per day and VOC emissions by approximately 0.3 tons per day. A detailed discussion of the seven feasible control measures is presented following Table 9. Measures were prioritized based on the work required for evaluation and implementation.

[1] The delayed measures that will be re-evaluated include: (1) Further Control of Water Heaters, Small Boilers, Process Heaters, and Steam Generators between 75,000 and 600,000 BTU/hour, and (2) Medium Boilers, Process Heaters, and Steam Generators between 2 million and 5 million BTU/hour.

Table 9
Prioritization of Study Measures for Evaluation and/or Adoption

Pollutant/ Control Measure	Other District Rule Number*	Estimated Emission Reduction Potential (Tons/Day)**	Estimated Cost-Effectiveness ($/lb)**	Adoption Schedule	Year of Full Implement-ation	2009 RAQS Priority	2016 RAQS Priority
NOx/Stationary Reciprocating Internal Combustion Engines – Best Available Retrofit Control Technology (Possible amendments to Rule 69.4.1)	SC 1110.2 SJV 4702	0.12	1 - 4	2017	10 years after adoption	N/A	High
NOx/Further Control of New Water Heaters, Small Boilers, Process Heaters, and Steam Generators between 75,000 and 600,000 BTU/hour (Re-evaluate possible amendments to Rule 69.2.1)	SC 1146.2	0.80	1 - 9	2017	15 years after adoption	N/A	High
VOC/ Composting Operations (Non-Residential) (Evaluate possible new Rule 67.25**)	SC 1133 SC 1133.1 SC 1133.2 SC 1133.3 SJV 4565 SJV 4566	0.3	To Be Determined	2017	2018	N/A	Medium
VOC/Further Control of Marine Coatings (Possible amendments to Rule 67.18)	SC 1106	0.01	To Be Determined	2018	2019	N/A	Low
NOx/Further Control of Natural Gas-Fired Fan-Type Central Furnaces (Possible amendments to Rule 69.6)	SC 1111	Not Available	To Be Determined	2018-2019	10 years after adoption	N/A	Low
VOC/Further Control of Aerospace Coating Operations (Possible amendments to Rule 67.9)	SC 1124	< 0.005	To Be Determined	2018-2019	2019+	No Further Evalua-tion	Low
NOx/Medium Boilers, Process Heaters, and Steam Generators between 2-5 million BTU/hour (Re-evaluate possible new Rule 69.2.2**)	SC 1146.1 SJV 4307 BA 9-7	0.25	To Be Determined	Delayed pending technology availability	20 years after adoption	Delayed until cost-effective	Delayed until cost-effective

* SC = South Coast AQMD; BA = Bay Area AQMD; SJV = San Joaquin Valley APCD;

** Estimated emission reductions, cost-effectiveness, and tentatively assigned rule numbers are subject to refinement during rule development.

4.3.1 Further Control of New Stationary Reciprocating Internal Combustion Engines – BARCT (Possible Amendments to Rule 69.4.1) *(High Priority)*

Rule 69.4.1 (Stationary Reciprocating Internal Combustion Engines – Best Available Retrofit Control Technology (BARCT)), was adopted on November 11, 2000, and applies to both gas and liquid-fueled engines. In 2001, ARB issued BARCT requirements for spark-ignited (gas-fired) stationary reciprocating internal combustion engines. The District has compared the ARB BARCT provisions to Rule 69.4.1 and determined that Rule 69.4.1 is, overall, at least as stringent as the BARCT determination. Since adoption, other California air districts, such as SCAQMD (Rule 1110.2 - Emissions from Gaseous – and Liquid-Fueled Engines) and SJVAPCD (Rule 4702 - Internal Combustion Engines) have tightened their emission limits and have also been more prescriptive in the equipment subject to regulation. If similar controls were determined feasible and thus were adopted in San Diego County, annual emission reductions are estimated to be approximately 42 tons of NOx per year (0.12 tons per day) when fully implemented. Amendments may also be warranted to ensure the Rule is consistent with federal New Source Performance Standards (NSPS) IIII and state Stationary Diesel Engine Air Toxic Control Measure requirements. Preliminary cost-effectiveness is estimated to range between $1 and $4 per pound of NOx reduced. Consequently, the District will further evaluate adoption of the lower emission limits, and if warranted, will schedule a proposed amendment to Rule 69.4.1 during the next three years.

4.3.2 Further Control of New Water Heaters, Small Boilers, Process Heaters, and Steam Generators between 75,000 and 600,000 BTU/hour (Re-evaluation of possible amendments to Rule 69.2.1) *(High Priority)*

The District currently regulates water heaters and boilers of various sizes through multiple rules including Rule 69.5.1 (for residential water heaters up to 75,000 BTU/hour) and Rule 69.2.1 (for small boilers over 600,000 BTU/hour). Large water heaters between 75,000 and 600,000 BTU/hour are currently not regulated in San Diego County but are in some other air districts. For example, SCAQMD Rule 1146.2 (Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters) regulates units between 75,000 and 2 million BTU/hour, limiting NOx emissions to 14 ng/J.

At a previous public workshop to discuss Rule 69.5.1, water heater manufacturers and distributors requested that District staff consider adopting control requirements matching those in SCAQMD for water heaters larger than 75,000 BTU/hour, to prevent uncontrolled units from being purchased in San Diego County and exported to the South Coast Air Basin. At the time, further controls for units in this size range were not cost-effective.

The District preliminarily re-evaluated the feasibility of amending Rule 69.2.1 to reflect a lower limit of 20 ppmv NOx for all new boilers and large water heaters between 75,000 and 2 million BTU/hour. Preliminary cost-effectiveness was estimated from $1.90 to $8.75 per pound of NOx reduced. The potential emission reductions are approximately 0.80 tons of NOx per day. Consequently, the District will further evaluate adoption of the lower emission limit, and if warranted, will schedule a potential amendment to Rule 69.2.1 during the next three years.

4.3.3 Control of Emissions from Composting Operations (Non-Residential) (Evaluate possible new Rule 67.25) *(Medium Priority)*

Currently, the District does not specifically regulate emissions from composting operations. However, these operations emit VOC through decomposition of organic materials (such as green and wood waste, animal manure, and food waste) during chipping and grinding, stockpiling, and composting activities. Moreover, composting activities are expected to increase in the region in response to federal, state, and local mandates for waste diversion and waste reduction. Accordingly, the District will investigate the feasibility of a measure to control VOC emissions from these sources.

Some other California air districts have adopted composting rules, including SCAQMD (Rule 1133-General Administrative Requirements, Rule 1133.1-Chipping and Grinding Activities, Rule 1133.2-Emission Reductions from Co-composting Operations, and Rule 1133.3-Emission Reductions from Green waste Composting Operations) and SJVAPCD (Rule 4565-Biosolids, Animal Manure, and Poultry Litter Operations, and Rule 4566-Organic Material Composting Operations). These rules establish best management practices (BMPs) for chipping and grinding of green waste to produce materials for composting or other uses, and to better manage stockpile operations to reduce VOC emissions. Accordingly, the District will evaluate these rules to determine which standards, if any, are feasible for implementation in San Diego County.

Importantly, other public agencies within California (including the California Department of Resources Recycling and Recovery and solid waste local enforcement agencies) are engaged in or are considering regulating composting activities to address other environmental objectives, such as landfill diversion and water quality. This has resulted in a dynamic regulatory environment, which will require the District to closely coordinate with other agencies and affected composting facilities to ensure that a possible District rule to control VOC emissions would be feasible, and consistent with other regulatory requirements.

SCAQMD estimated a reduction of 328.5 tons of VOC per year (0.9 tons per day) from 17 composting facilities within the SCAQMD region. Preliminary estimates for annual emission reductions in San Diego County, if similar controls are found to be feasible, are at least 120 tons per year (0.3 tons per day), about a 40% reduction in VOC emissions. Consequently, the District has scheduled further evaluation of the proposed measure, and if warranted, will consider adoption of a new rule during the next three years.

4.3.4 Further Control of Marine Coatings (Possible Amendments to Rule 67.18) *(Low Priority)*

District Rule 67.18 (Marine Coating Operations) sets VOC limits for primers, coatings, topcoats, and sealers used in the coating of marine and fresh water vessels, oil drilling platforms, navigational aids, and structures intended for exposure to a marine environment. Limits vary depending on the material, but range between 275 and 700 grams of VOC per liter of coating, which generally aligns with other air districts' standards. The rule was last amended on May 15, 1996.

An assessment is necessary to determine whether lower VOC limits of marine coating materials could occur. Consideration will also be given to lowering the VOC limits of cleaning materials used in marine coating operations, which is currently set at 200 grams or less of VOC per liter of coating. Anticipated emission reductions from these minor amendments are expected to reduce emissions by 4 tons of VOC per year (0.01 tons per day), with cost-effectiveness to be determined at a later date. Consequently, the District has scheduled further evaluation of a proposed amendment to Rule 67.18, and if warranted, will consider adoption of the lower emission limits during the next three years.

4.3.5 Further Control of Natural Gas-Fired Fan-Type Central Furnaces (Possible Amendments to Rule 69.6) *(Low Priority)*

The District adopted Rule 69.6 (Natural Gas-Fired Fan-Type Central Furnaces) on June 17, 1998. The rule established NOx emission limits of 40 ng/J for new residential furnaces. On September 5, 2014, SCAQMD amended their equivalent rule (Rule 1111 - Reductions of NOx Emissions from Natural-Gas-Fired, Fan-Type Central Furnaces) to further tighten the NOx emission limit for furnaces by 65%, to 14 ng/J. Because the tightened emission limit is technology forcing, complying units are not currently available. SCAQMD Rule 1111 also phases the requirement in over four years as manufacturers comply with the new emission limits.

The District will monitor the forthcoming availability of complying units. When a sufficient number of compliant models are found to be available, the District will schedule further evaluation of a proposed amendment to Rule 69.6, and if warranted, will consider adoption of the lower emission limit during the next three years.

4.3.6 Further Control of Aerospace Coating Operations (Possible Amendments to Rule 67.9) *(Low Priority)*

Emissions in this source category have greatly declined in San Diego County since 1990 due to three factors: the implementation of District Rule 67.9 (Aerospace Coating Operations), the decline in government funding for aerospace operations and, in particular, the closing of one large facility. Total VOC emissions from this source category are now estimated to be 30 tons per year.

SCAQMD Rule 1124 (Aerospace Assembly and Component Manufacturing Operations) contains similar VOC limits in most coating categories. However, some categories contain lower limits, including adhesive bonding primers, antichafe coatings, dry lubricative materials

(nonfastener), form release coatings, fuel tank coatings, paint strippers, and sealants. In San Diego County, VOC emissions from these coating materials that exceed the limits in Rule 1124 are estimated to be less than two tons per year. Emission reductions anticipated from adopting the Rule 1124 limits are estimated to be less than two tons per year (0.005 tons per day).

Based on this evaluation, there does not appear to be a significant emission reduction potential for this item. However, the District has scheduled further evaluation of a proposed amendment to Rule 67.9 to refresh the rule and update emission limits as needed to meet federal requirements. If warranted, the District will consider adoption of the modifications during the next three years

5. MOBILE SOURCE PROGRAMS

The District operates two broad categories of emission control programs related to mobile sources: Incentive Programs and an Indirect Source Program. In addition, the District coordinates with SANDAG to implement Transportation Control Measures that further control emissions from mobile sources. These are discussed in the following three sections.

5.1 INCENTIVE PROGRAMS

Financial incentive programs augment traditional control programs to further encourage technology development and provide cost-effective emission reductions in advance of regulatory requirements. The incentive programs that have been implemented in San Diego County during the last six years are listed below. Programs that are anticipated to continue during the next three years are identified with an asterisk (*):

- Carl Moyer Memorial Air Quality Attainment Program;*
- Voucher Incentive Program (VIP);*
- Proposition 1B Goods Movement Emission Reduction Program (GMERP);*
- Vehicle Registration Fund Program (VRF);*
- Lower Emission School Bus Replacement and Retrofit Program (LESB);
- American Recovery and Reinvestment Act Funding for the National Clean Diesel Funding Assistance Program (ARRA);
- Air Quality Power Generation Mitigation Fund;*
- Airport Taxicab Replacement Program; and
- Lawn Mower Exchange Program*/Lawn and Garden Equipment Replacement Program (LGER)

Table 11 summarizes the funds allocated by program between July 2007 and June 2015 and the estimated annual emission reductions that will be obtained over the lives of the funded projects. Local projects funded during the 2007-2015 period resulted in total emission reductions of the following pollutants:

- **VOC:** 44.62 tons per year (0.12 tons per day)
- **NOx**: 882.20 tons per year (2.42 tons day)
- **Carbon Monoxide (CO):** 157.64 tons per year (0.43 tons per day)
- **Particulate Matter (PM):** 32.15 tons per year (0.09 tons per day)

A brief discussion of each program is presented after Table 11, describing its origin, funding sources, implementing agency, and the types of projects funded.

Table 11
Incentive Programs
Annual Funding Allocations and Emission Reductions

Program	Amount Funded	Annual Emission Reduction (tons/year)			
FY2007-2008		**VOC**	**NO_x**	**CO**	**PM**
Carl Moyer MY9	$3,786,473	14.41	129.71		5.43
Carl Moyer Match (VRF)	$1,119,504				
Air Quality Power Generation Mitigation Fund (Moyer, LESB, Other)	$373,443				
Lawnmower Exchange	$95,910	0.52	0.10	9.17	
TOTAL:	*$5,375,330*	*14.93*	*129.81*	*9.17*	*5.43*
FY2008-2009		**VOC**	**NO_x**	**CO**	**PM**
Carl Moyer MY10	$4,411,889	4.20	80.84		2.51
Carl Moyer Match (VRF)	$608,585				
Air Quality Power Generation Mitigation Fund (Moyer, LESB, Other)	$859,989				
Lawnmower Exchange	$95,871	0.57	0.11	10.10	
TOTAL:	*$5,976,334*	*4.77*	*80.95*	*10.10*	*2.51*
FY2009-2010		**VOC**	**NO_x**	**CO**	**PM**
Carl Moyer MY11	$3,115,588	2.40	62.28		1.97
Carl Moyer Match (VRF)	$963,361				
VIP (VRF, Multi-District)	$690,000	0.21	12.78		0.36
Air Quality Power Generation Mitigation Fund (ARRA/LESB, Moyer Match, Other)	$2,233,956	0.92	0.78	6.10	0.50
Lawnmower Exchange	$106,000	0.98	0.20	17.27	
Lawn and Garden Equipment Replacement (LGER)	$57,500				
TOTAL:	*$7,166,405*	*4.51*	*76.04*	*23.37*	*2.83*
FY2010-2011		**VOC**	**NO_x**	**CO**	**PM**
Carl Moyer MY12	$2,051,967	1.03	25.61		0.64
Carl Moyer Match (VRF)	$374,625				
VIP (Moyer, VRF, Multi-District)	$1,504,609	0.55	28.34		0.28
Proposition 1B (GMERP)	$5,551,636		88.11		3.88
ARRA National Clean Diesel Program	$1,482,420	0.92	0.78	6.10	0.50
Air Quality Power Generation Mitigation Fund (ARRA/LESB, Moyer Match)	$1,081,566				
School Bus (LESB)	$423,399	1.00		4.68	0.57
Lawnmower Exchange	$106,000	0.95	0.19	16.70	
Lawn and Garden Equipment Replacement (LGER)	$52,085				
TOTAL:	*$12,628,307*	*4.45*	*143.03*	*27.48*	*5.87*
FY2011-2012		**VOC**	**NO_x**	**CO**	**PM**
Carl Moyer MY13	$675,020	0.36	8.47		0.12
Carl Moyer Match	$398,975				
VIP (Moyer, Multi-District)	$2,535,000	0.98	59.96		0.30
Air Quality Power Generation Mitigation Fund	$0				
Proposition 1B (GMERP)	$1,569,475		18.90		0.71
School Bus (LESB)	$5,275,201	5.83	10.05	38.76	3.37
Lawnmower Exchange	$113,960	0.65	0.13	11.40	
TOTAL:	*$10,567,631*	*7.82*	*97.51*	*50.16*	*4.50*
FY2012-2013		**VOC**	**NO_x**	**CO**	**PM**
Carl Moyer MY14	$1,883,440	1.88	28.55		1.02
Carl Moyer Match (VRF)	$1,062,633				
Air Quality Power Generation Mitigation Fund (Moyer Match, TRIP)	$648,640				
VIP (Moyer, Multi-District)	$750,000	0.38	21.94		0.19
Proposition 1B (GMERP)	$10,321,397		177.69		7.29
Vehicle Registration Fund (VRF) - *Match for GMERP*	$322,454				
School Bus (LESB)	$32,925	0.11		0.83	0.07
Lawnmower Exchange	$129,140	0.73	0.15	12.91	
TOTAL:	*$15,150,629*	*3.10*	*228.33*	*13.74*	*8.57*

Table 11 (continued)
Incentive Programs
Annual Funding Allocations and Emission Reductions

Program	Amount Funded	Annual Emission Reduction (tons/year)			
FY2013-2014		**VOC**	**NO_x**	**CO**	**PM**
Carl Moyer MY15	$1,673,922	1.18	14.35		0.70
Carl Moyer Match (VRF)	$200,636				
Air Quality Power Generation Mitigation Fund (Moyer Match)	$0				
VIP (Moyer, VRF, Match)	$1,226,692	0.39	24.69		0.03
Proposition 1B (GMERP)	$0				
Vehicle Registration Fund (VRF) – *Match for GMERP*	$0				
School Bus (LESB)	$0				
Lawnmower Exchange	$129,140	0.73	0.15	12.91	
TOTAL:	*$3,230,390*	*2.30*	*39.19*	*12.91*	*0.73*
FY2014-2015		**VOC**	**NO_x**	**CO**	**PM**
Carl Moyer MY16	$2,678,423				
Carl Moyer Match (VRF)	$133,514				
Air Quality Power Generation Mitigation Fund (Moyer Match)	$0	2.24	22.40		0.96
VIP (Match, VRF)	$268,227	0.05	4.54		0.04
Proposition 1B (GMERP)	$4,578,697		60.21		0.71
Vehicle Registration Fund (VRF) – *Match for GMERP*	$360,000				
School Bus (LESB)	$0				
Airport Taxicab Replacement Program	$132,000		0.10	2.67	
Lawnmower Exchange	$80,520	0.45	0.09	8.04	
TOTAL:	*$8,231,381*	*2.74*	*87.34*	*10.71*	*1.71*
	Total Amount Funded	**Total Annual Emission Reduction (tons/year)**			
		VOC	**NO_x**	**CO**	**PM**
GRAND TOTAL:	**$68,326,407**	**44.62**	**882.20**	**157.64**	**32.15**

5.1.1 Carl Moyer Program

The Carl Moyer Memorial Air Quality Standards Attainment Program is a state-funded program[1] offering incentives to reduce NOx emissions from heavy-duty diesel engines. The program consists of seven general categories of heavy-duty diesel engine upgrade applications: on-road, emergency vehicle (fire apparatus), off-road, locomotive, marine, portable and stationary agricultural engines, and lawn and garden equipment.

Within these categories, four types of projects are typically eligible for funding: new purchase, repower (engine replacement), equipment replacement (replacing an entire piece of equipment with a newer model), and retrofitting (the addition of control equipment such as a filter). Examples of funded projects include but are not limited to: (1) the purchase of new alternative technology switcher locomotives, (2) repowering earth moving equipment and marine vessels, and (3) installing shore power infrastructure. The District also began offering Carl Moyer funding to replace eligible off-road equipment, such as tractors, dozers, scrapers, and excavators.

[1] The incentive program, codified in H&SC §44275 et seq., is named in honor of the late scientist Dr. Carl Moyer (1937-1997), in recognition of his work in the air quality field and his efforts to bring about this incentive.

As of September 2016, the program has an overall cost-effectiveness requirement of no more than $18,260 per ton of NOx + PM(x20) + VOC reductions. Project types in each category have additional funding criteria. Funds are allocated by the ARB to participating air districts based on a combination of population, severity of the local air quality problems, and the historical allocation of Carl Moyer funding.

Air districts are required to provide a 15% match for each project. Since 2008, the District has primarily used Vehicle Registration Fund (VRF) and Air Quality Power Generation Mitigation funds to meet the Carl Moyer program match requirement. State law also requires that 50% of the funds be allocated to Environmental Justice areas (low-income communities or communities of color impacted by air pollution). In 2012, the District updated its Environmental Justice area definition and criteria to more accurately reflect changing demographics and census data.

5.1.2 Voucher Incentive Program (VIP)

The Voucher Incentive Program (VIP) is a new subcomponent of the Carl Moyer Program, designed to provide a streamlined approach to reduce emissions from small on-road heavy-duty truck fleets (10 or fewer trucks) by retrofitting existing, high-polluting vehicles or replacing them with new, lower-emission vehicles.

The program consists of three main project categories for heavy-duty and medium-duty diesel vehicles: (1) new replacement vehicle purchase, (2) used replacement vehicle purchase, and (3) retrofit purchase and installation. Voucher amounts range between $10,000 and $45,000 per vehicle, depending on the project type selected, engine year, and usage of the equipment. The District partners with dealerships, installers, and dismantlers to participate in the program. Truck owners then work with approved vendors to select their new equipment and apply for funding. If approved by the District, the truck owner receives a voucher for the amount of grant funding, which is redeemable at the participating dealership. The equipment owner subsequently completes the sale for the new equipment, with the amount of the voucher deducted from the overall cost. The District then reimburses the participating dealership for the approved voucher amount.

As with other Carl Moyer project categories, VIP has an overall cost-effectiveness requirement of no more than $18,260 per ton of NOx + PM(x20) + VOC reductions. Funding for VIP emanates from state Carl Moyer program funds or air district match funds.

The District began implementation of VIP in 2010, and since that time the program has proven to be popular. As of March 2016, the program has funded nearly 200 truck replacement projects, totaling approximately $7 million. Emission reductions from VIP are estimated at approximately 152.2 tons of NOx per year (0.42 tons per day), 1.2 tons of PM per year (0.003 tons per day), and 2.56 tons of VOC per year (0.007 tons per day).

5.1.3 Proposition 1B Goods Movement Emission Reduction Program (GMERP)

The Proposition 1B Goods Movement Emission Reduction Program (GMERP) is a statewide emission reduction program codified into H&SC §39625 et seq. The GMERP is a partnership between the ARB and local agencies to quickly reduce air pollution emissions and health risk

from freight movement along California's major trade corridors. Projects funded under this program must achieve early or extra emission reductions not otherwise required by law or regulation. The program is funded through a $1 billion statewide bond authorized by California voters in November 2006.

Funding for the program is allocated by trade corridor and project category funding targets. In 2008, the ARB approved funding targets for each trade corridor for the program, which resulted in the San Diego/Border Trade Corridor (historically split between San Diego and Imperial Counties) being targeted to receive six percent of the overall funding. The ARB also approved targets for project categories, which resulted in the majority of funding (approximately 70%) targeted towards heavy-duty truck projects that reduce on-road emissions.

Historically, the program has consisted of five main project categories: heavy-duty diesel trucks, locomotives and railyards, ships at berth (shore power), commercial harbor craft, and cargo handling equipment. To date, the District has funded projects in the heavy-duty diesel truck and commercial harbor craft categories. The program has undergone multiple administrative changes since its inception in 2008, resulting in varied grant amounts per project. Truck projects, for example, have ranged between $5,000 for diesel particulate filter installation and $60,000 for truck replacement projects.

Since 2010, the District has funded 70 diesel particulate filter retrofits, 454 truck replacements, and three commercial harbor craft repower projects, expending over $22 million in project funding. In 2015, ARB made significant changes to the program to incentivize engine manufacturers to produce technology that is zero or near-zero emissions, in line with the ARB Sustainable Freight Initiative. The District anticipates continuing to implement the program in FY 2016-2017 and beyond as funding remains available.

5.1.4 Vehicle Registration Fund Program

The Vehicle Registration Fund (VRF) is a District program established pursuant to state law (H&SC 44220 et seq.). The program uses a vehicle registration fee collected by the Department of Motor Vehicles (DMV) to reduce air pollution from motor vehicles and for related planning, monitoring, enforcement, and technical studies necessary to implement the CCAA in San Diego County. In 1990, the Board established a $2 annual fee for every on-road motor vehicle registered in the County. In 1992, AB 2766 was amended to allow California air districts to collect up to $4 per vehicle in motor vehicle emission reduction fees. In 2009 the Board approved a resolution to increase the fee to $4 per registered vehicle.

The revenues collected are used to provide matching funds to continue and expand beneficial mobile source emission reduction programs in the region, notably the Carl Moyer Program and Proposition 1B Goods Movement Emission Reduction Program. For example, match funding was offered in two project solicitations of GMERP to encourage applicants to purchase alternative fuel equipment instead of diesel. Additionally, the District provided significant additional match funding for the Carl Moyer program during FY2013-2014 to complete

additional off-road equipment projects.[1] These funds also provide cost recovery for the District's motor vehicle-related planning, monitoring, enforcement, and technical studies pursuant to the CCAA.

5.1.5 Lower-Emission School Bus Program (LESB)

The Lower-Emission School Bus Replacement and Retrofit Program (LESB), developed by the ARB and implemented regionally by the District, reduced the exposure of school children to cancer-causing and smog-forming diesel school bus emissions through a combined approach of replacing and retrofitting older high-polluting school buses. The District provided grant funding for school districts with pre-1987 model year buses to replace those buses with either new compressed natural gas (CNG) buses or new lower-emission diesel buses by contributing 25% of the cost, up to a maximum of $25,000. The program paid the balance of the cost. School districts that purchased CNG buses were eligible to receive an additional 10% of their award for CNG fueling infrastructure expenses. Funding to retrofit existing school buses with PM filters was also available, provided the device was certified by the ARB to reduce PM emissions by 85%. The program paid for the full cost of the filter plus installation, up to a maximum of $20,000 per retrofit.

The Lower-Emission School Bus Program was instituted statewide in fiscal year 2000-01 with a $50 million budget allocation from the Governor. Those funds were spread over two years and allocated to California air districts based on the district's share of all pre-1987 model year buses. ARB continued allocations of LESB funding from 2009 to 2010 via Proposition 1B, which authorized $200 million in additional funds to further replace or retrofit aging school buses statewide.

The District fully expended all available LESB funding in mid-2012 and has not received additional funding since that time. Should funding become available in the future, and if sufficient project interest exists, the District will work with local school districts to open another solicitation for emission reduction projects. Since inception, LESB has provided funding to local school districts throughout the County, which subsidized the purchase of 50 CNG replacement buses, 54 diesel replacement buses, and retrofit of 600 diesel buses with PM filters.

5.1.6 American Recovery and Reinvestment Act Funding for the National Clean Diesel Funding Assistance Program (ARRA)

In 2009, the President signed into law the American Recovery and Reinvestment Act. As part of this $789 billion stimulus package, enhanced funding was allocated to EPA's Diesel Emission Reduction Act (DERA) grant funding, increasing the total amount of funding for national and state programs to support EPA's National Clean Diesel Campaign (NCDC).

All grantees that received funding in the ARRA/DERA program from 2009 were required to fund projects that promoted the economic recovery, preserved and/or created jobs, and reduced diesel emissions. Grantees were expected to complete projects quickly and report expected job

[1] VRF funding allocated in FY 2013-2014 will be reported annually to ARB for several years to fulfill the District's match funding requirements of the Carl Moyer program.

creation/retention totals and emission reductions as a result of funded projects to make sure all requirements were met.

In 2009, the District applied for funding and was awarded $1.4 million from EPA to reduce diesel emissions from aging and polluting school bus fleets throughout San Diego County. The program partially funded each diesel emission reduction project, along with cost-sharing by the applicant and the District. The projects included 12 replacements of pre-1987 diesel school buses, two repower and retrofit combination projects on existing diesel school buses, and 113 PM filter retrofit projects.

5.1.7 Air Quality (AQ) Power Generation Mitigation Fund

The District originally created the Air Quality Power Generation Mitigation Fund in response to mitigation funds received from various sources. For example, in 2004, as part of the California Energy Commission (CEC) Power Plant Site approval process, the CEC conditioned approval of the Palomar Energy Project in Escondido, which provided a $1.2 million PM mitigation fund in response to community concerns regarding project-related PM emissions. Similarly in 2006, the District received $1.33 million in mitigation funds from approval of the Calpine Corporation Energy Project in Otay Mesa, and in 2009 received $244,000 in mitigation funds from approval of the Orange Grove Energy Project in Fallbrook.

The fund has incentivized various mobile source incentive projects, including retrofitting older school buses and heavy-duty trucks with PM filters, installing fast-fill natural gas refueling facilities, replacing and retrofitting off-road equipment, and replacing aging school bus CNG fuel tanks, among other projects. The fund has also leveraged match funding from other programs such as Carl Moyer and ARRA.

5.1.8 Airport Taxicab Replacement Program

The Airport Taxicab Replacement Program was a reimbursement program administered by the District in 2015 to incentivize current taxicab owners at the San Diego International Airport (Airport) to replace aging, high polluting vehicles with new fuel-efficient and low-emitting hybrid electric or alternative fuel taxicabs. The program provided a $4,000 reimbursement grant for each replacement vehicle. Eligibility requirements included having an operable taxicab that was model year 2005 or newer, and possession of a permit to operate at the San Diego International Airport. The equipment owner was required to destroy the old vehicle to ensure permanent emission reductions, and to purchase a new 2014 or 2015 hybrid or alternative fuel vehicle. In all, 33 vehicles were replaced and received funding, together reducing criteria pollutant emissions by nearly three tons per year (0.007 tons per day). The new vehicles also provide much better fuel economy, which will result in significant greenhouse gas emission reductions.

5.1.9 Lawn Mower Exchange Program/Lawn and Garden Equipment Replacement Program (LGER)

The Lawn Mower Exchange Program is an annual one-day event administered by the District for San Diego County residents. It allows County residents to exchange a working gasoline-

powered lawn mower for a voucher to purchase a new non-polluting electric lawn mower at a substantially reduced price. The cordless rechargeable electric mower has a typical retail price of between $450 and $500. With the voucher, the price is reduced to approximately $100. Participants purchase the new electric mower at the venue. The gas-powered mowers are disposed of at a metal recycling facility.

The Lawn Mower Exchange Program is typically funded by the District with penalties collected from violators of air quality requirements. In 2009, the ARB opened a grant solicitation for the Lawn and Garden Equipment Replacement Program (LGER). LGER was approved by the ARB as part of the AB 118 Air Quality Improvement Program Funding Plan for Fiscal Year 2009-10, and provided rebates or vouchers of up to $250 for the purchase of new cordless zero-emission residential lawn mowers in California. The solicitation was open to all California air districts already designated as nonattainment for the federal eight-hour ozone standard at the time. In 2010, the District received $150,000 in funding from LGER, which was used to augment funding to the District's Lawn Mower events in 2010 and 2011. The additional funding almost doubled the number of mowers typically sold during the annual event.

During the 2014 event, the District surveyed 510 out of 587 participants. The average age of mowers replaced was approximately 10 years old, and the average horsepower (hp) was approximately five hp. The age of mowers ranged between one and 35 years old, and horsepower ranged between two hp and seven hp. Collectively in 2014, the program replaced over 2,600 hp of gasoline powered mower engines with zero-emission mowers.

The Lawn Mower Exchange Program has been popular with the public and provides an innovative means for residents to participate in an air quality improvement program. To date, the program has replaced 7,997 gasoline-powered mowers with nonpolluting electric mowers in San Diego County, totaling over $1.7 million in funding expended and over 40 tons of ozone-forming emissions reduced annually. In 2016, the program was expanded to offer other types of zero-emission lawn and garden equipment at a reduced price, in exchange for gasoline-powered equivalent equipment.

5.2 TRANSPORTATION CONTROL MEASURES STATUS

Implementation continues for the six Transportation Control Measures contained in previous RAQS revisions, consistent with program commitments made in the 2050 Regional Transportation Plan (RTP) and the 2014 Regional Transportation Improvement Program (RTIP) adopted and implemented by the San Diego Association of Governments (SANDAG). The six RAQS Transportation Control Measures are: (1) Transit Improvements; (2) Vanpools; (3) High-Occupancy Vehicle (HOV) Lanes; (4) Park-and-Ride Facilities; (5) Bicycle Facilities; and (6) Traffic Signal Improvements. Together, these measures have reduced motor vehicle travel and emissions. Emission reductions from these measures are expected to continue in the next three years as funding becomes available.

5.2.1 Transit Improvement and Expansion Program

The District's financial incentive programs have been utilized to fund the incremental cost of replacing diesel-fueled public transit buses with compressed natural gas (CNG) transit

buses. Currently, 78% of all transit buses in the County (620 of 796 total) are fueled by CNG. Both of the transit providers in the San Diego County region have chosen to adopt the alternative-fuel path of the ARB's Transit Bus Fleet Rule and will purchase CNG buses exclusively in the future.

Bus revenue miles[1] in San Diego County increased 6% since Fiscal Year 2004 to 30.9 million miles in 2015. Further, rail transit services, including the San Diego Trolley,[2], SPRINTER,[3], and the COASTER Commuter Rail Service,[4] have increased to over 10.6 million revenue car miles in 2015. More importantly, total passengers per revenue mile system-wide (a measure of system productivity) have increased by more than 23% over that same period.

5.2.2 Vanpool Program

SANDAG operates a Regional Vanpool Program through the "iCommute" program.[5] As of March 2016, 720 vanpools carrying 5,459 passengers were operating in the San Diego County region, a 37% increase over 2006 levels. Additional vanpools are anticipated as SANDAG expands its marketing efforts to the region's large employers.

5.2.3 HOV Lanes

Currently, there are three freeways in the San Diego County region with HOV lanes: Interstate (I)-5 (San Diego Freeway), I-805 (Jacob Dekema Freeway), and I-15 (Escondido Freeway). Additional HOV lanes are currently under construction on I-805.

The I-5 HOV lane extends 7.8 miles from the I-5/I-805 junction to just south of Manchester Avenue. The current configuration of the I-805 HOV lane is segmented, consisting of ten miles between Mira Mesa Boulevard to Manchester Avenue on I-5, and another eight miles between East Naples Street to State Route (SR) 94. The I-15 Express Lanes extend 20 miles from SR 163 to just south of SR 78. Direct access is available at the north and south ends, and Direct Access Ramps are available at Hale Avenue, Del Lago Boulevard, West Bernardo Drive, SR 56/Ted Williams Parkway, and Hillary Drive. Intermediate Access Points that provide direct access from the main lanes to the Express Lanes are approximately every two to three miles. Vehicles with two or more occupants, buses, and motorcycles may use the I-15 Express Lanes for free, and solo drivers participating in the FasTrak® Program may use the Express Lanes for a per-trip toll. Finally, a buses-only northbound lane on SR 163, extending 0.4 miles from A Street in downtown San Diego to I-5, enables buses to bypass general purpose traffic when entering SR 163.

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[1] Revenue (car) miles are the total distance that a fleet travels while available for passenger service.

[2] The San Diego Trolley is a 54-mile light rail transit system serving southern San Diego County.

[3] The SPRINTER is a 22-mile light rail line, connecting Oceanside to Escondido that began service in January 2008.

[4] The COASTER is a 42-mile passenger rail line between Oceanside and Downtown San Diego that began service in FY 1996.

[5] "iCommute" is a regional transportation demand management program charged with providing shared-ride services and education to employers and individuals on all ridesharing and biking options. Example services include, but are not limited to: (1) Carpool Ride Matching, (2) Guaranteed Ride Home Program, (3) Promotion of teleworking and alternative work schedules, and (4) Park-and-Ride Programs.

Other HOV Lane improvements in the region include:

- Metered Ramps. HOV preferential lanes are provided at 181 (57%) of the 318 metered ramps on the region's freeways. The HOV preferential lanes do not bypass the meters but they do have a shorter queue, reducing travel time.

- I-15 Express Lanes. The region has committed $1.4 billion to the I-15 Express Lanes project to ease traffic congestion in the I-15 corridor from SR 163 to SR 78 in Escondido. Construction began in November 2003 with the middle segment being completed in 2009 and the north and final segment completed in 2012.

  The project includes four lanes with a moveable barrier in the median of I-15 to accommodate two to three lanes in the peak direction and one to two lanes in the opposite direction. The Express Lanes facility provides priority to HOVs such as carpools and vanpools, regular transit services, and a Bus Rapid Transit (BRT) System. Excess capacity in these lanes is "sold" to solo drivers for a fee, as is the case with the FasTrak® program. The Express Lanes are separated from the general purpose lanes by a barrier with access provided every two to three miles.

- I-5 North Coast Express Lanes. This project will be modeled after the I-15 Express Lanes project and will construct 27 miles of Express Lanes from La Jolla to Oceanside. The I-5 North Coast Express Lanes will feature multiple access points to/from the facility to the general purpose lanes and direct access ramps that connect local arterials directly to the Express Lanes facility. A number of project alternatives were studied as part of the environmental document that Caltrans developed. In August 2014, the California Coastal Commission approved the North Coast Corridor Public Works Plan. Construction on Phase 1 of the North Coast Corridor will begin in 2016 and will include new carpool lanes, two rail double tracking projects and a restoration of a coastal lagoon and hundreds of acres of sensitive habitat. The North Coast Corridor project will include double tracking of 97% of the San Diego segment of the LOSSAN corridor, bike and pedestrian paths, and habitat restoration, in addition to the Express Lanes.

- Managed Lanes/HOV Network. SANDAG's San Diego Forward: The Regional Plan (Regional Plan) has developed a robust Managed Lane (Express Lane)/HOV network. Shared by highway and transit users, the Managed Lanes/HOV system will be expanded from the current 28 miles to include over 160 miles in the future. The Regional Plan includes:

  - Four-lane Managed Lane facilities on I-5, I-15, and I-805 with value pricing;[1]
  - Two-lane Managed Lane facilities on SR 52, SR 54, SR 78, SR 94, and SR 125;
  - In addition to mainline Managed Lane improvements, the Plan includes direct HOV to HOV connectors at the I-5/I-805 merge, and at seven other interchanges where major HOV facilities intersect.

[1] Variable tolls for solo drivers based on traffic congestion in the general lanes.

5.2.4 Park-and-Ride Facilities

Currently, there are 61 active Park-and-Ride lots in the region, with 3,600 spaces available. More lots are anticipated as funding opportunities and/or space becomes available. In addition, transit patron parking is currently available at six COASTER and 13 SPRINTER stations, with 3,800 spaces available. Vehicular parking for transit riders is provided at 25 of the Trolley stations and five Rapid stations, with approximately 7,200 confirmed spaces.

5.2.5 Bicycle Facilities

The bikeway system currently includes 1,136 miles of bikeways in the San Diego County region, consisting of Class I (exclusive bicycle path separated from roadway), Class II (striped on-street bicycle lane), and Class III (shared with motor vehicles) facilities.

In September 2013, the SANDAG Board of Directors approved a $200 million Regional Bike Plan Early Action Program that focuses on the region's highest priority bicycle corridors. As of July 2014, SANDAG is also implementing approximately 35 miles of regional bikeway projects that are in various phases of planning, preliminary engineering, design and construction.

SANDAG also maintains a system of over 850 bike locker spaces available throughout the region at most Trolley stations, all COASTER stations, and select Park-and-Ride locations. Currently, 306 spaces are electronic, on-demand spaces. All remaining locker spaces will be converted to electronic, on-demand spaces. Unlike conventional lockers assigned to a single user, the converted spaces are available any time they are not in use to anyone participating in the bike locker program.

5.2.6 Traffic Signal Improvements

Traffic flow improvements mostly consist of traffic signal improvements to reduce idling and associated emissions. All federally funded traffic signal projects selected with the federal transportation funding program (TEA-21) have been implemented (117 projects). The 2014 RTIP includes two state funded projects as well as 26 locally funded traffic signal improvements. These projects are also inclusive of the Regional Arterial Management System or RAMS program. This program includes the installation of the regional traffic signal management software and linking of the local agencies to a common system. The system was recently launched and is now being implemented throughout the County. SANDAG is assisting local agencies to administer and coordinate the implementation of the region wide traffic signal integration and arterial management systems projects.

5.3 INDIRECT SOURCE PROGRAM STATUS

Pursuant to Health and Safety Code Section 40918(a)(4) of the CCAA, the District's Indirect Source Program, adopted by the Board in December 1997, consists of ongoing outreach and assistance to local governments, land developers, citizen groups, and non-profit organizations to reduce vehicle trips and associated emissions through voluntary land use and street design improvements (i.e., "smart growth"). District efforts during 2009-2015 included:

- Ongoing technical assistance to SANDAG on programs to encourage smart growth, including the following:
    - Adoption of the 2011 RTP and Sustainable Community Strategy to reduce greenhouse gases, which included smart growth incentives and funding for walking, bicycling, transit, and neighborhood traffic safety programs.
    - Creation of a regional Complete Streets Policy, as called for in the 2011 RTP.
    - Adoption of goals for the 2015 RTP update, including alternatives to single occupancy vehicles, air quality, greenhouse gas emission reductions, and public health.

- Technical assistance to both the City of San Diego and the County of San Diego in crafting their respective Climate Action Plans, to reflect greater reliance on transit and non-motorized transportation modes.

- Workshops/presentations and technical assistance for city planning staffs, traffic engineers, developers, merchant organizations, neighborhood groups, and others working to improve conditions for walking, bicycling, and transit.

- Developed fact sheets providing technical information on smart growth and alternative transportation modes, and posted them to the District's website.

2009 RAQS Further Study Measure: Indirect Source Rule

The 2009 RAQS committed the District to study the feasibility of adopting an Indirect Source Rule (ISR), specifically by:

- Examining the requirements of existing ISR rules in other California air districts,
- Evaluating the potential feasibility of an ISR rule for San Diego County sources, and
- Determining whether a local ISR would provide significant emission reductions beyond that achieved by the District's existing voluntary Indirect Source Program.

The District carried out the required analysis and makes the following findings:

Comprehensive Indirect Source Rules addressing vehicle trips and associated emissions attributable to new land developments have been adopted by two air districts, the SJVAPCD and Imperial County APCD, with more limited variations adopted by other districts. The SCAQMD has listed an Indirect Source Rule as a backup control measure, but for the current time has deferred to the Southern California Association of Governments' (SCAG) 2012 Sustainable Community Strategy, adopted in accordance with SB 375 (2008). As with Sustainable Community Strategies (SCS) adopted throughout the state, the SCAG SCS plans reductions in indirect source emissions over time through a combination of smart growth land use strategies and investments in transit services, bicycle paths, and pedestrian facilities.

The District similarly finds that an Indirect Source Rule is not feasible for the San Diego County region because associated reductions in ozone-forming emissions would not be substantial beyond current efforts to reduce vehicle miles traveled (VMT). Specifically, in 2015 SANDAG on behalf of its 19 affiliated local jurisdictions adopted a RTP/SCS that projects far greater

reliance on walking, bicycling, and transit to meet future travel needs. By federal law, the RTP must be based on local general plans. Since the early 2000's, most of the region's jurisdictions have adopted land use strategies that reduce future low-density development in open space areas, in favor of higher-density developments in areas with existing infrastructure, residents, and services.

As a result of these changes, SANDAG now projects that 79% of new jobs and 87% of new housing will be located within 0.5 miles of frequent transit. The 2050 Plan, adopted in 2011, includes 500+ miles of new bicycle routes and lanes, committing to a significant portion of these improvements in an Early Action Program. In addition, SANDAG adopted a separate program to improve conditions for walking and biking to transit (so-called "first mile/last mile" access), and the addition of new transit services by 2050. This includes two Bus Rapid Transit routes now in operation, as well as a new express bus service along the I-15 corridor that takes advantage of recently completed High Occupancy Transit lanes. Improvements or extensions of the light rail, commuter rail, and express bus services were adopted, in addition to development of new streetcar routes.

In addition to changes in the emphasis of regional planning for transportation, state laws and the California Environmental Quality Act (CEQA) guidance have been evolving significantly in recent years to emphasize non-vehicle travel. Some examples of recent guidance include:

- In 2009, the Office of Planning and Research (OPR) amended its CEQA Guidance to recommend parking supply not be included in CEQA reviews of new development, and placed greater emphasis on safety of bicycling and walking.
- The legislature adopted laws reducing CEQA review requirements for bicycle facilities and local bicycle master plans.
- Most significantly, SB 743 (2013) directed OPR to revise the guidelines to eliminate categorization of traffic congestion as an environmental impact, and to recommend alternative transportation metrics emphasizing bicycling, walking, transit, and greater diversity of land uses (which promotes alternatives to driving). In January 2016, OPR issued draft amendments to the CEQA guidance that effectively changes the state's required traffic metric from Level of Service (traffic flow) to Vehicle Miles Traveled (total driving). This change will incentivize developers and cities to minimize driving in the same way that adopted Indirect Source Rules do, but will operate statewide and affect a greater variety of project types.

Adopting new planning goals or transportation metrics do not in themselves ensure that all development or infrastructure projects will minimize indirect source emissions to the same extent an Indirect Source Rule might have. It is possible, for example, that jurisdictions or Metropolitan Planning Organizations (MPO's) will approve projects that are exceptions to their adopted plans. However, based on past planning trends, exceptions are most likely to be rare.

For the foregoing reasons, the District does not consider an ISR to provide additional reductions in ozone-forming emissions, and would in fact be duplicative to planning efforts already operating on a larger scale and addressing a greater variety of potential sources.

6. CONCLUSIONS

6.1 EMISSION OFFSETS

Amendments to New Source Review Rules 20.1-20.4 were adopted on November 4, 1998, repealing state emission offset requirements as authorized by state law (Assembly Bill 3319, 1996 Statutes). Attachment II to this RAQS Revision contains a detailed reassessment and reaffirmation—prepared pursuant to state law and ARB guidance—that state emission offset requirements (beyond current federal offset requirements in the New Source Review rules) are not necessary in San Diego County to attain and maintain state ambient air quality standards for ozone by the earliest practicable date.

6.2 NET IMPACTS OF STRATEGY REVISIONS

Pursuant to state law, a revised control strategy must be at least as effective in improving air quality as the control strategy being replaced (H&SC §40925(b)). Two NOx control measures were delayed for insufficient cost-effectiveness, but have been retained in this RAQS Revision for further evaluation and, if warranted, will be considered for adoption during the next three years. In addition, two NOx and three VOC control measures have been scheduled for further evaluation in this RAQS Revision. If warranted, the District will consider adoption of the amended/new rules during the next three years. Combined, the seven measures[1] are estimated to reduce NOx by approximately 1.2 tons per day, and VOC by approximately 0.3 tons per day. Consequently, this RAQS Revision will provide additional reductions of ozone precursor emissions relative to the 2009 RAQS and, therefore, is more effective in improving air quality.

[1] The seven measures reflected herein are: (1) Further Control of Stationary Reciprocating Internal Combustion Engines – BARCT, (2) Further Control of Marine Coatings, (3) Control of Composting Operations (Non-Residential), (4) Further Control of Water Heaters, Small Boilers, Process Heaters, and Steam Generators between 75,000 and 600,000 BTU/hour, (5) Further Control of Natural Gas-Fired Fan-Type Central Furnaces, (6) Further Control of Aerospace Coating Operations, and (7) Medium Boilers, Process Heaters, and Steam Generators between 2 million and 5 million BTU/hour.

ATTACHMENT I

CHARTS OF SITE-SPECIFIC OZONE EXPECTED PEAK DAY CONCENTRATIONS

Site-specific air quality trends through 2015 at each of the five long-term monitoring sites are presented as charted year-to-year changes in the Expected Peak Day Concentration (EPDC), in Figures I-1 through I-5, on the following pages. The figures indicate ongoing improvement at all sites since 1989. The charts present data back to the first year for which data are available for each site.

Figure I-1
Expected Peak Day Concentration, Alpine Monitoring Site

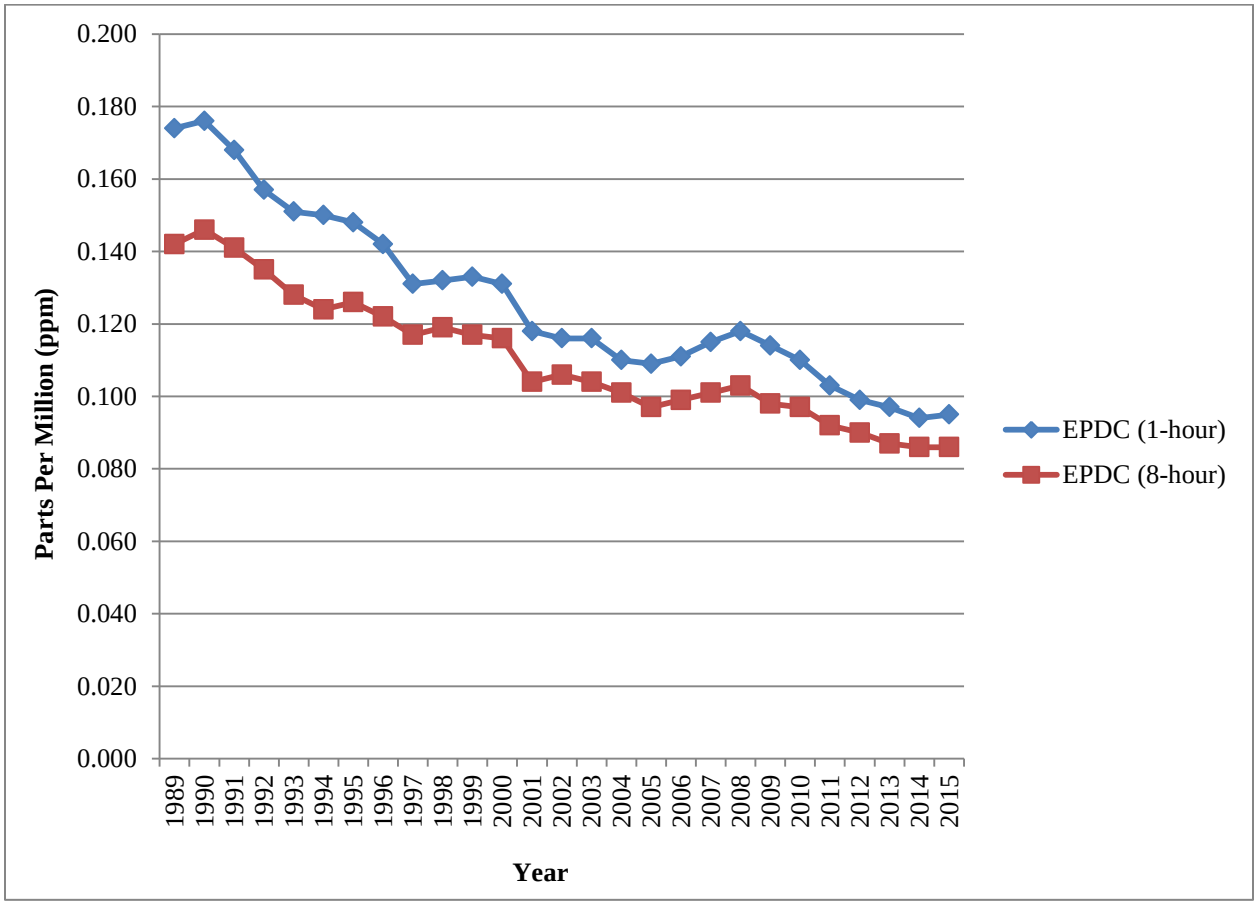


Figure I-2
Expected Peak Day Concentration, Chula Vista Monitoring Site

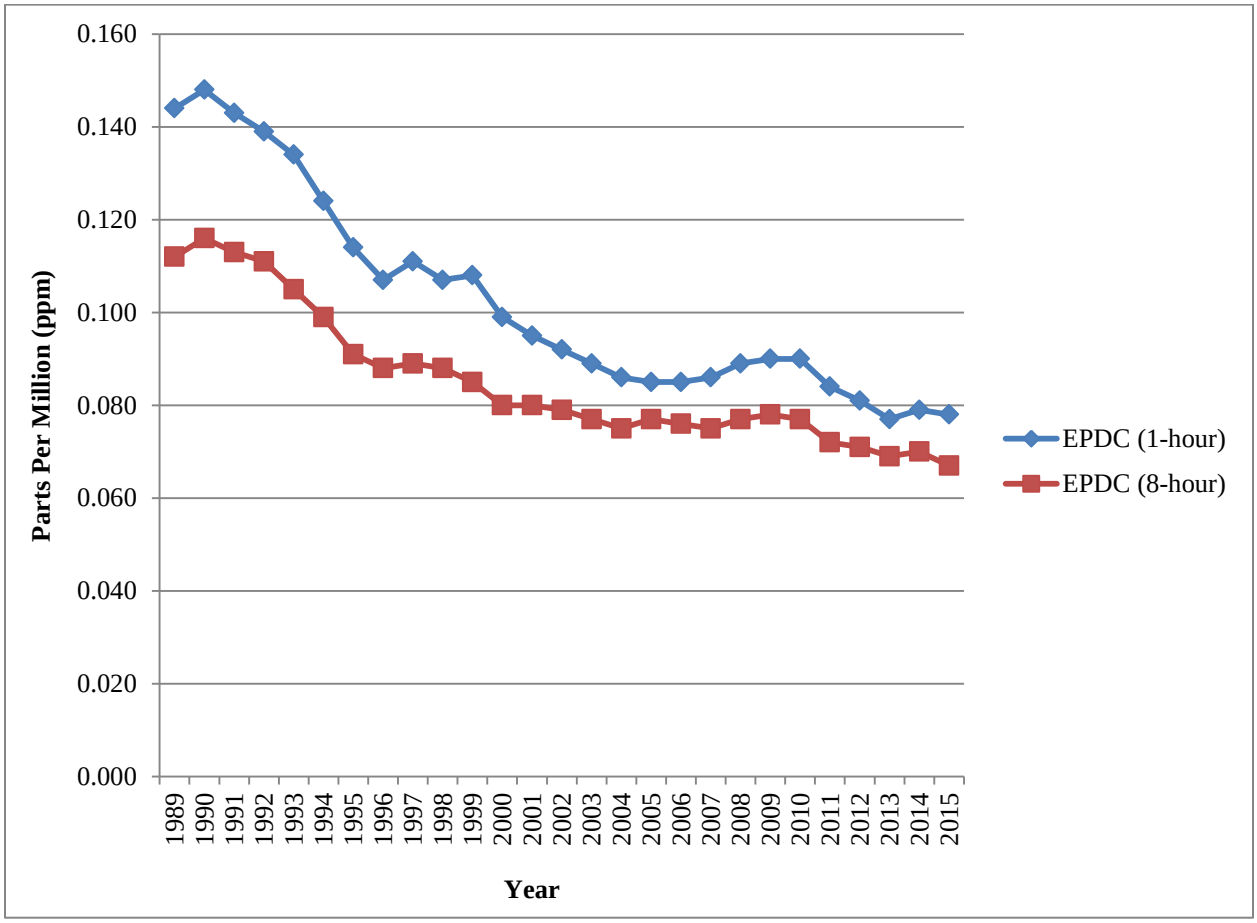


Figure I-3
Expected Peak Day Concentration, Del Mar Monitoring Site

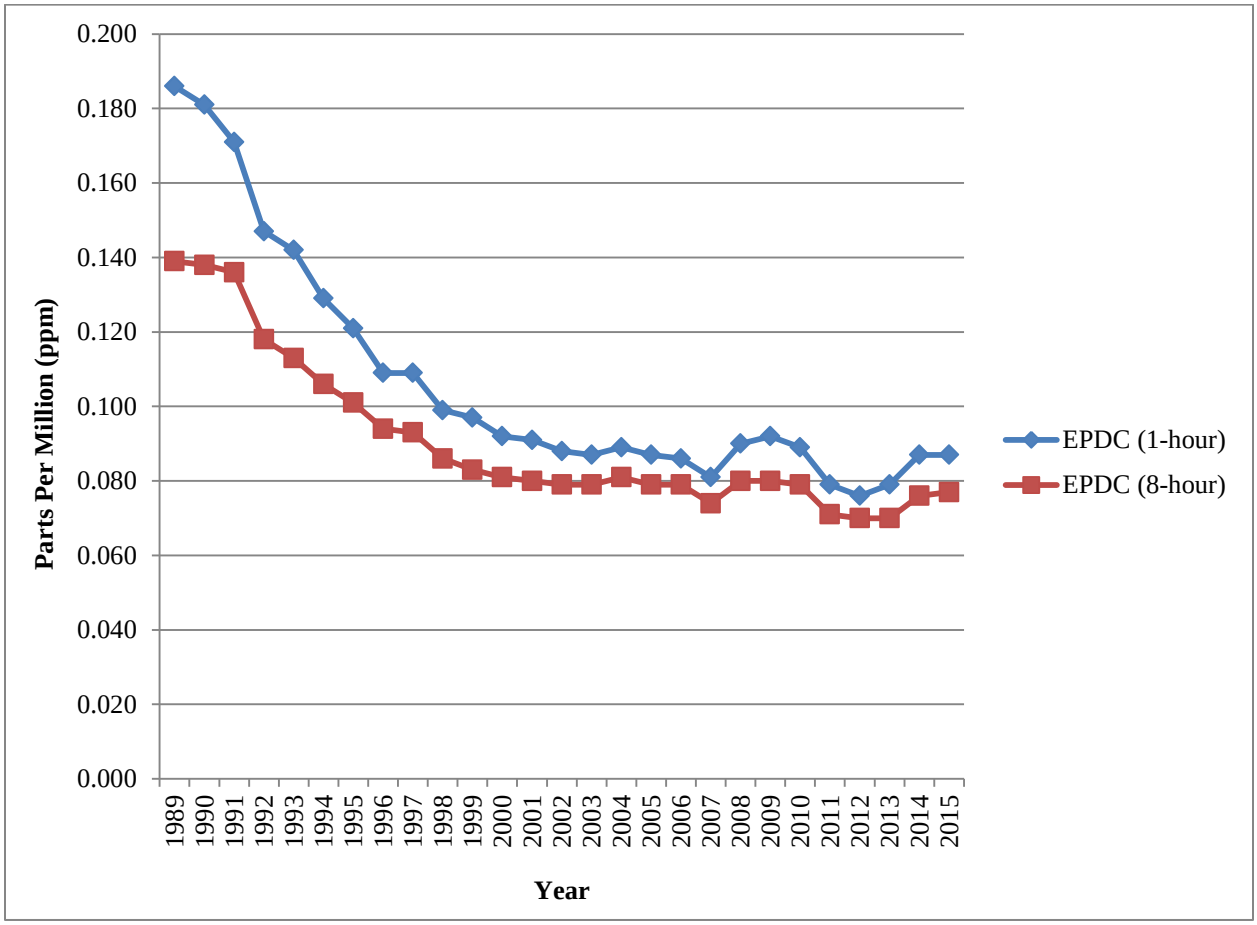
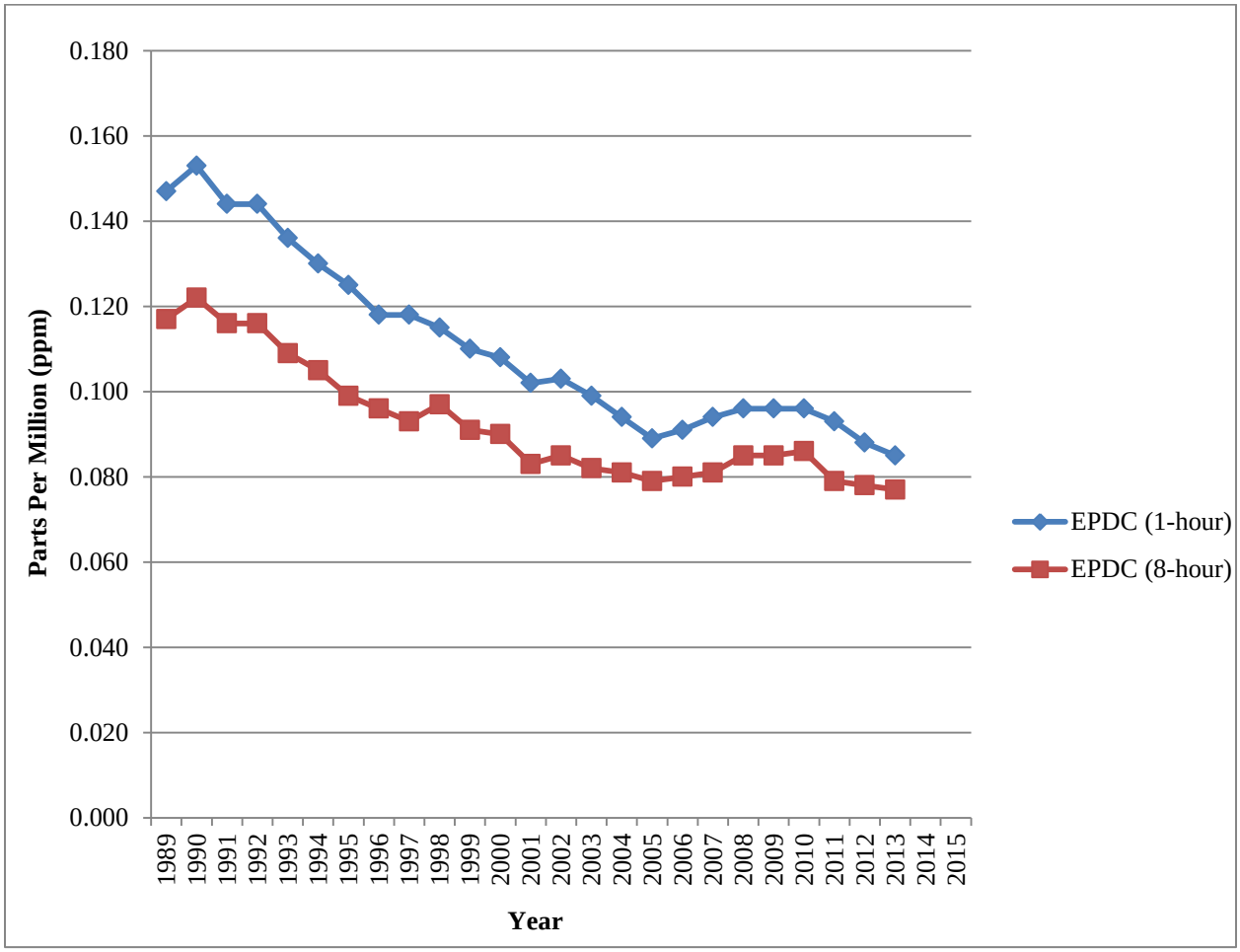
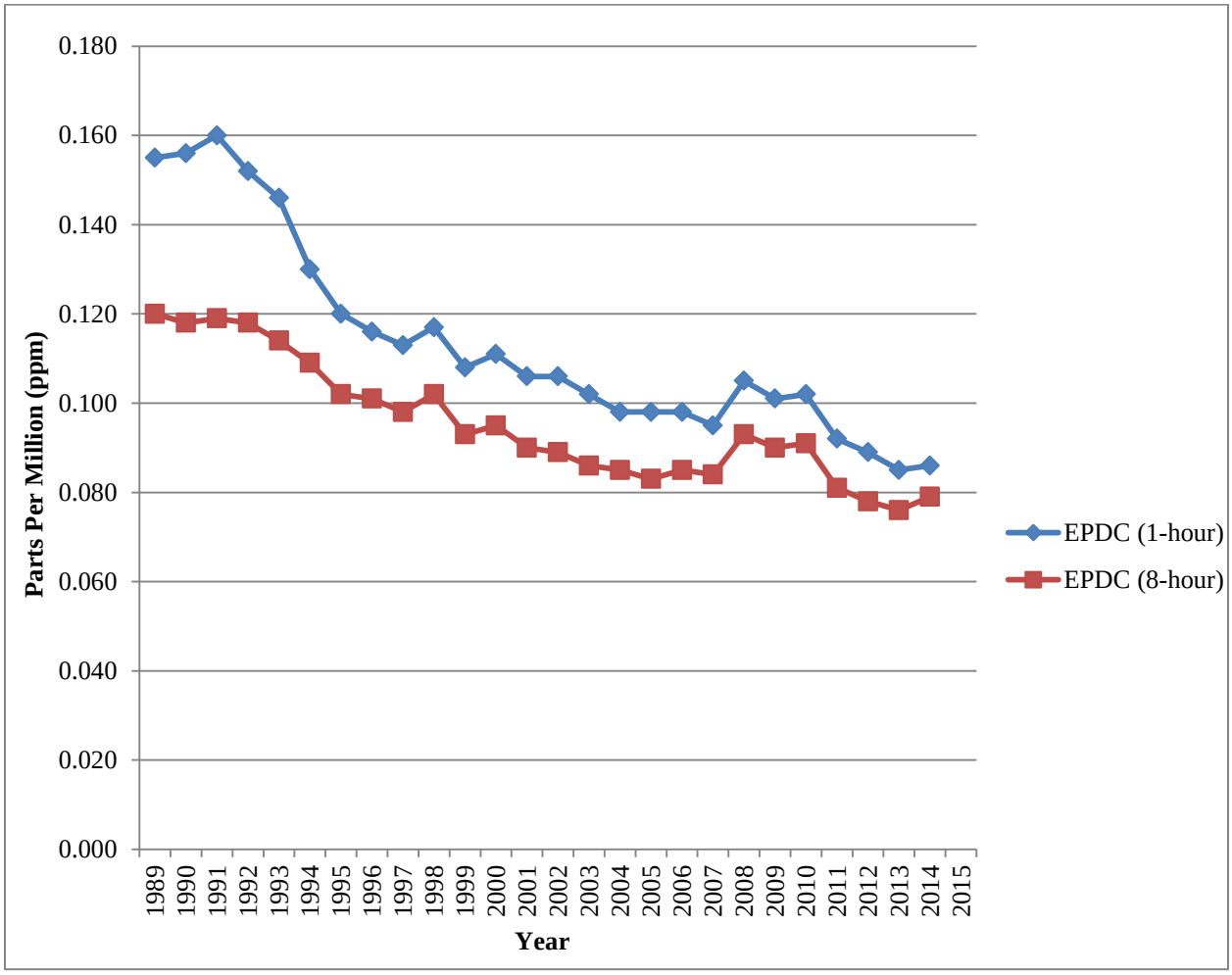


Figure I-4
Expected Peak Day Concentration, El Cajon Monitoring Site



*2014-2015 values not included due to a change in location (Redwood Dr. to Floyd Smith).

Figure I-5
Expected Peak Day Concentration, Escondido Monitoring Site



*2015 values not included due to the removal of monitor in October 2015.

ATTACHMENT II

ASSESSMENT OF THE IMPACT OF REPEALING STATE REQUIREMENTS FOR EMISSION OFFSETS

II.1 EMISSION OFFSET REQUIREMENTS

New Source Review (NSR) Rules 20.1 through 20.4 were amended in 1998 to locally repeal state requirements for emission offsets, as authorized by state law.[1] Offsets are emission reductions provided to mitigate emission increases from new or modified stationary sources. State offset requirements had applied to sources having the potential to emit 15 tons or more per year of NOx or VOC. The requirements were locally repealed following an evaluation of their minimal impact and a determination by the District and the ARB that they were not needed to achieve state ambient air quality standards for ozone by the earliest practicable date. Other requirements of NSR rules remain in effect, including federal offset requirements.[2]

To qualify as offsets, the emission reductions must not otherwise be required by local, state, or federal mandates; that is, the emission reductions must be "surplus."[3] Qualifying emission reductions are approved and recorded by the District as "credits" in an offset register (also called a "bank"), and an emission reduction certificate is issued to the owner. These credits can later be withdrawn by their owner to satisfy an emission offset requirement, or sold or transferred to a new owner for this purpose. District Rules 26.0-26.10 (Emission Reduction Credits) govern this process.

In practice, emission reduction credits are difficult to generate. Stringent District, state and federal requirements for stationary source emission controls leave little opportunity for creating surplus emission reductions for use as offsets. Consequently, most banked emission reduction credits are derived from permanently curtailing or shutting down a permitted facility or equipment.[4] Such shutdowns and resulting air quality benefits routinely occur as a normal course of business activity, independent of offset requirements.[5] No additional air quality benefit is realized (beyond that which occurred at the time of the shutdown) when shutdown-related emission reductions are subsequently banked and used for offset purposes. Consequently, state offset requirements essentially resulted in costly paper transfers of emission reduction credits from one company to another with no corresponding air quality benefit.

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[1] California Health and Safety Code (H&SC) Sections 40918.5 and 40918.6

[2] Ongoing NSR provisions include state requirements for Best Available Control Technology (BACT) on equipment with potential to emit 10 pounds or more per day of VOC or NOx, and federal requirements for Lowest Achievable Emission Rate (LAER) control technology and offsets (at a 1.2-to-1 ratio) for new or modified facilities with potential to emit 50 tons or more per year of VOC or NOx.

[3] The emission reductions must also be real, quantifiable, and enforceable.

[4] Shutdowns are a federally authorized source of offsets. See "Use of Shutdown Credits for Offsets," John Seitz, Director, Office of Air Quality Planning and Standards, EPA, date unknown.

[5] In fact, a majority of shutdown-related emission reductions are never banked.

II.2 REQUIRED FINDINGS FOR REPEAL

To streamline regulatory processes and reduce costs without compromising air quality, state law was amended in 1996 (Assembly Bill 3319) to allow an air district to locally repeal State emission offset requirements if the Board and the ARB meet stringent health-protective requirements. Before repealing state emission offset requirements, the Board must review an estimate of emissions growth, if any, that is likely to occur as a result of the repeal, and make the findings described below. These findings must be confirmed by the ARB and reconsidered when updating the RAQS.

II.2.1 All Feasible Control Measures

The Board must find that all feasible control measures for emission sources under District purview have been adopted or are scheduled for consideration of adoption. The proposed Revision of the RAQS addresses and satisfies this requirement. Consequently, it is not further addressed herein.

II.2.2 Transport Mitigation

The Board must find that state emission offset requirements are not necessary to comply with the ozone transport mitigation requirements of state law. In fact, transport mitigation requirements do not apply to San Diego County, which is not identified in state law as an upwind source of transported air pollution. Consequently, transport mitigation requirements are not further addressed herein.

II.2.3 Expeditious Ozone Attainment

The Board must find that state emission offset requirements are not necessary to attain and maintain state ambient air quality standards for ozone by the earliest practicable date. Pursuant to ARB Guidance,[1] a key criterion is ensuring that the repeal of state offset requirements does not significantly impact a projected trend of decreasing total ozone-precursor emissions in the region.[2] This requirement is the primary focus of the assessment herein. The related finding that unbanked emission reductions from shutdown of emitting facilities (the usual source of offsets) exceeded growth in emissions from new or modified major sources was also reconfirmed.

II.3 TRACKING REQUIREMENTS

The ARB issued an Executive Order in 1998 specifying requirements for tracking and assessing emission increases associated with permitting actions that would have triggered state offset requirements were they still in place:[3]

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[1] "Air Resources Board Staff's Basis For A Determination That A District's No-Net-Increase Permitting Program Is Not Necessary Pursuant to Health and Safety Code §40918.5 and 40918.6" (October 31, 1997).

[2] Page 5 of the ARB guidance

[3] ARB Executive Order G-97-007-02 (December 17, 1998).

II.3.1 Emission Increases from Affected New or Modified Sources

Determine the total annual and cumulative increases of VOC and NOx emissions associated with permitting actions that would have (or may have) triggered state offset requirements were they in place. This information is used to determine the quantity of offsets foregone as a result of the repeal of state offset requirements.

II.3.2 Emission Decreases from Shutdowns

Determine the annual and cumulative reductions of VOC and NOx emissions that resulted from permanent equipment shutdowns that have not been registered as emission reduction credits in the District credit bank. This information is used to determine the level of emission reductions that have continued to occur from shutdowns (following the repeal of state offset requirements), which historically are the primary source of emission offsets. To the extent shutdowns and associated emission benefits continue to occur, the potential air quality impact of the repeal is reduced or eliminated.

II.3.3 Details

Tracking details include: (1) the year in which the emission increase or decrease occurred; (2) the source of the emission increase or decrease; (3) the nature of the emission change (e.g., the equipment type, whether it is a new or modified source, whether it is a permanent shutdown); (4) the amount of emission increase or decrease in tons per year; (5) the pollutant type; (6) the amount of offsets, if any, provided pursuant to federal requirements; (7) any adjustments to unbanked shutdowns that would be necessary to qualify the associated reductions as offsets;[1] and (8) any other pertinent information agreed upon by the District and ARB as necessary to assess the impact of the repeal of state offset requirements.

II.4 TRACKING RESULTS

The District previously instituted tracking procedures to identify and compile the required data for assessing the impact of the repeal of state offset requirements. The tracking information for the assessment herein (shown in Tables II-1 through II-4, beginning on page II-8) reflects the five-year period of January 1, 2010, through December 31, 2014. Tracking information for earlier periods is reflected in the previous assessments conducted in 1998, 2001, 2004 and 2007. Due to database changes, 2007 through 2009 data could not be collected. However, the overall decreasing emissions trend indicates no significant impact due to the data gap.

[1] Pursuant to Rule 26.0, Banking of Emission Reduction Credits, emission reductions from shutdowns for which credits are granted are discounted by the emission reductions that would have occurred had Reasonably Available Control Technology or Best Available Retrofit Control Technology requirements applied.

II.4.1 Emission Increases from 10-Ton Sources

Table II-1 compares permitted and actual emission increases from affected sources for which the District issued permits during the five-year tracking period. No offsets were required to satisfy existing federal offset requirements. The listed increases occurred at sources with actual aggregate post-project emissions exceeding 10 tons per year of either VOC or NOx. As with the previous assessments, the threshold of 10 tons per year was used as a conservative indicator of sources with a potential to emit 15 tons per year, which is the threshold that would have triggered state offset requirements were they still in place.[1]

II.4.2 Emission Decreases from Unbanked Shutdowns

Table II-2 lists unbanked actual emission reductions from permanent facility or equipment shutdowns, adjusted where necessary for eligibility as emission offsets. The list is not exhaustive, given that additional shutdowns and associated emission reductions likely occurred, particularly from smaller emission sources.[2] Regardless, as indicated in Table II-2, shutdowns and associated emission reductions continue to occur since the repeal of state offset requirements.

II.4.3 Net Emissions Differential

Table II-3 combines information from Table II-1 (permitted emission increases from all projects at sites at or above 10 tons per year) with information from Table II-2 (unbanked actual emission reductions) to show the resulting net emissions differential for each year during the 2010-2014 tracking period. Consistent with expectations, the repeal of state offset requirements has not resulted in a significant increase in VOC and NOx emissions.

For both the five years examined (2010-2014) and the 13 years examined for all assessment periods (1999-2014) resulted in an annual average VOC emissions decrease of 18.9 tons per year. This net decrease resulted from unbanked actual emission reductions from shutdowns exceeding permitted emission increases from new sources, despite conservative assumptions. (As discussed previously, not all unbanked emission reductions from shutdowns were uncovered, and new sources affected by the repeal of state offset requirements were assumed to include sources with actual VOC emissions of between 10-15 tons per year, although many such sources would not have triggered state offset requirements.)

The average-annual net NOx emissions differential during the 2010-2014 tracking period was a NOx emissions decrease of 11.2 tons per year. The 13-year trend indicates an average-annual NOx emissions decrease of 6.2 tons per year. Further, not all unbanked emission reductions

[1] In reality, many sources with actual emissions between 10 and 15 tons per year would not have been subject to State offset requirements because of permit conditions capping their potential to emit at 15 tons per year.

[2] Considerable effort is required to accurately quantify unbanked emission reductions from shutdowns, including making adjustments for eligibility as emission offsets. Consequently, likely not all unbanked emission reductions have been uncovered, particularly those from smaller sources.

from shutdowns were uncovered, and affected new sources were conservatively assumed to include sources between 10-15 tons of NOx per year.

II.4.4 Bank of Emission Credits

Table II-4 is provided for informational purposes and pursuant to ARB guidelines to indicate the origin of emission reduction credits registered in the District's offset bank as of November 19, 2014. Previous trends hold—that is, permanent equipment or facility shutdowns remain the primary source of offsets rather than voluntary process or control technology improvements. Specifically, as indicated in Table II-4, 86.8% of NOx and 85.2% of VOC emission reduction credits registered in the offset bank as of November 19, 2014, were derived from shutdowns.

II.5 REQUIRED COMPARISONS

The ARB Executive Order also requires five specific comparisons addressing emission impacts of the repeal of state offset requirements and the air basin emission inventories. The comparisons are designed to help evaluate whether the predicted minimal impacts of the repeal, projected into the future, continue to be minimal given updated emission inventory and tracking data.

II.5.1 Current versus Previous Projections of Emission Impacts

Tables II-5 and II-6 provide updated projections of annual and cumulative VOC and NOx emission impacts, respectively, of the repeal of state offset requirements. The projections are compared with the modest emission increases conservatively projected in the District's 1998 assessment. Tables II-5 and II-6 show no increase in VOC or NOx, respectively, during the five-year tracking period.

As shown in Table II-5, cumulative VOC impacts exceed the originally projected "expected-case" impacts during the tracking period and in future years. However, the actual VOC impacts are far below originally projected "worst-case" impacts in any year through 2035. Table II-6 shows no NOx increases since 2006.

II.5.2 Impacts as a Percentage of Annual Total Emissions

As shown in Table II-7, the VOC emissions impact of repealing state offset requirements was close to 0% of total annual permitted VOC emissions during the 2010-2014 tracking period. During all years examined (1998-2035), the net VOC impacts fall within the range of 0.06% to 0.18%, a negligible impact.

As shown in Table II-8, the cumulative NOx emissions impact of the repeal was below 0.08% of the total NOx inventory during the 2010-2014 tracking period. The projected future impact in 2035, based on the eight-year trend, is 0.15%.

These results indicate the impacts of the repeal of state offset requirements continue to constitute a negligible percentage of the total emission inventory. The repeal will not significantly impact an existing trend of decreasing total regionwide emissions.

II.5.3 Impacts as a Percentage of Annual Stationary-Source Emissions

As shown in Table II-9, the cumulative impact of the repeal of state offset requirements was less than 0.7% of the total stationary-source VOC emissions inventories during the 2010-2014 tracking period. Given the projected future annual impact of zero VOC emissions and slight growth in stationary source emissions, the cumulative percentage impact decreases each year through 2035.

As shown in Table II-10, the cumulative impact of the repeal of state offset requirements was less than 3.0% of the total stationary-source NOx emissions inventories during the 2010-2014 tracking period. The cumulative impact of the repeal of State offset requirements results in a projected 2035 cumulative impact of 1.76% of the stationary-source NOx emissions inventory.

The projected future cumulative impact of the repeal of state offset requirements is expected to be a negligible percentage of the VOC and NOx stationary-source emissions inventories through 2035. Temporary emission increases could occur, but are not expected to constitute a significant percentage of the stationary-source inventory, nor significantly impact the projected trend of decreasing total emissions. Further, emission increases would be subject to federal offset requirements if specified emission thresholds are exceeded.

II.5.4 Current versus Previous Projections of Percentage Impacts

Percent of Total Emissions. Tables II-11 and II-12 compare the originally projected worst-case and expected-case impacts of the repeal of state offset requirements (as identified in the 1998 assessment) with actual 1998-2014 data and with an update of projected future-year impacts. The projected future impact for VOC exceeds the expected-case scenarios, but is far less than the worst-case scenario impact. The projected future impact for NOx is lower than both the expected-case and worst-case scenarios.

Percent of Stationary-Source Emissions. Tables II-13 and II-14 compare original and updated projections of impacts of the repeal of state offset requirements expressed as a percentage of stationary-source inventories. Projected cumulative VOC and NOx impacts fall below the original expected-case impacts.

II.5.5 Current versus Previous Emissions Inventories and Projections

Tables II-15 and II-16 compare updated VOC and NOx emissions inventories and inventory projections with those used in the original 1998 demonstration. For both VOC and NOx, the most recent data provided by ARB indicate mobile source emissions are projected to decrease through 2035, while stationary and area sources are projected to increase in the same timeframe. Also for both pollutants, the total inventory continues to reflect substantial future decreases in emissions, due primarily to anticipated reductions in mobile source emissions. Moreover, conclusions of the previous assessments hold true; though not expected, even sizable emission impacts of the repeal of state offset requirements would not significantly impact the trend of decreasing total emissions in the region.

II.6 CONCLUSION

As demonstrated in the preceding analysis prepared pursuant to state law and ARB guidance, permanent facility or equipment shutdowns have continued apace since the repeal of state offset requirements, providing substantial emission benefits. The repeal of state offset requirements has not significantly impacted the projected trend of decreasing total ozone-precursor emissions in San Diego County, nor is it anticipated to in the future. Additionally, all feasible control measures under District purview have been adopted or are scheduled for consideration of adoption, and state emission offset requirements are not necessary to comply with the ozone transport mitigation requirements of state law. Therefore, pursuant to state law and ARB guidance, the District concludes that state emission offset requirements remain unnecessary in San Diego County to attain and maintain the state ambient air quality standard for ozone by the earliest practicable date.

Table II-1
Permanent Emission Increases and Offsets Provided From Sources with Actual Aggregate Post-Project Emissions Exceeding 10 Tons/Year of VOC or NOx
January 1, 2010 – December 31, 2014
(Tons/Year)[1]

Name	Application Description	VOC (TPY) Permitted	VOC (TPY) Actual	NOx (TPY) Permitted	NOx (TPY) Actual
SD Metro Pumping Station #2	Emergency generator	0.01	0.01	0.16	0.16
UCSD	Waste burner	0.00		0.02	
USMC Base Marine Ground OPS	Emergency generator	0.06		0.06	
	2010 Totals	**0.07**	**0.01**	**0.24**	**0.00**
Commander Navy Region SW	Emergency generator	0.01		0.01	
Commander Navy Region SW	Emergency generator	0.00	0.00	0.02	0.02
Commander Navy Region SW	Emergency generator	0.00	0.00	0.02	0.02
Commander Navy Region SW	Emergency generator	0.01		0.05	
Kyocera America Inc	Oxidation catalyst	0.04		0.00	
Sea World San Diego	Emergency generator	0.00		0.05	
SFPP LP	Emergency generator	0.02		0.02	
UCSD	Emergency generator	0.01	0.01	0.24	0.24
UCSD	Emergency generator	0.04		0.04	
UCSD	Emergency generator	0.00		0.03	
USN Hospital 2 PWC	Emergency generator	0.09		0.09	
	2011 Totals	**0.21**	**0.00**	**0.56**	**0.00**
USN Sub Base	Marine coating	0.56		0.00	
USN Sub Base	Marine coating	0.56		0.00	
USN Sub Base	Emergency generator	0.02		0.02	
Commander Navy Region SW	Emergency generator	0.00		0.06	
Grossmont Hospital	Boiler	0.00		1.73	
Kyocera America Inc	Emergency generator	0.03		0.50	
Qualcomm Inc	Turbine	2.50		3.50	
Qualcomm Inc	Emergency generator	0.21		0.21	
Salk Institute	Boiler	0.15		1.23	
Salk Institute	Boiler	0.15		1.23	
Salk Institute	Emergency generator	0.01		1.23	
Sea World San Diego	Emergency generator	0.00		0.04	
Southern California Edison	Boiler	0.46		2.19	
UCSD	Emergency generator	0.00		0.02	
UCSD	Emergency generator	0.00		0.02	
UCSD	Emergency generator	0.01	0.01	0.33	0.33
USMC Base Marine Ground OPS	Emergency generator	0.00		0.00	
USN Naval Sta 1 SCE	Emergency generator	0.01		0.01	
	2012 Totals	**4.68**	**0.01**	**12.32**	**0.33**
CNP Signs & Graphics	Surface coating	1.83	1.56	0.00	
Commander Navy Region SW	Emergency generator	0.00		0.18	
Commander Navy Region SW	Emergency generator			0.06	0.06

[1] Applications above required no emission offsets for the pollutant increases. Emissions of 0.00 are less than 0.005 tons per year.

Name	Application Description	VOC (TPY) Permitted	VOC (TPY) Actual	NOx (TPY) Permitted	NOx (TPY) Actual
Costco Wholesale	Emergency generator	0.00		0.07	
General Dynamics NASSCO	Marine & Aerospace coating	0.64		0.00	
Minnesota Methane LLC San Diego Miramar Facility	Cogen	2.20		10.80	
Minnesota Methane LLC San Diego Miramar Facility	Cogen	2.20		10.80	
Qualcomm Inc	Emergency generator			0.39	0.39
Qualcomm Inc	Emergency generator			0.39	0.39
Solar Turbines Inc	Engine test stand	0.10		24.90	
UCSD	Emergency generator	0.00		0.00	
UCSD	Emergency generator	0.00		0.02	
UCSD	Emergency generator	0.00		0.02	
UCSD	Emergency generator	0.00		0.02	
UCSD	Emergency generator	0.00		0.02	
UCSD	Emergency generator	0.00		0.03	
UCSD	Emergency generator	0.00		0.02	
USMC Base Marine Ground	Emergency generator	0.00		0.03	
USMC Base Marine Ground	Emergency generator	0.00		0.02	
USMC Base Marine Ground	Emergency generator	0.00		0.05	
USMC MCAS Miramar	Emergency generator	0.00		0.07	
USMC MCAS Miramar	Emergency generator	0.00		0.19	
USMC MCAS Miramar	Emergency generator	0.00		0.01	
USMC MCAS Miramar	Emergency generator	0.00		0.01	
USMC MCAS Miramar	Emergency generator	0.00	0.00	0.02	0.02
USMC MCAS Miramar	Emergency generator	0.00	0.00	0.02	0.02
	2013 Totals	**6.98**	**0.00**	**48.15**	**0.06**
Chromalloy, San Diego	Surface coating	1.83		0.43	
Commander Navy Region SW	Emergency generator	0.00		0.02	
Commander Navy Region SW	Emergency generator	0.00	0.00	0.02	0.02
Commander Navy Region SW	Emergency generator	0.00	0.00	0.02	0.02
Commander Navy Region SW	Emergency generator			0.06	0.06
Commander Navy Region SW	Emergency generator			0.06	0.06
General Dynamics NASSCO	IC engine	0.00	0.00	1.82	3.12
Hydranautics	Emergency generator	0.00	0.00	0.07	0.07
Otay Landfill Gas LLC	IC engine	3.67		10.80	
Otay Landfill Gas LLC	IC engine	3.67		10.80	
Richard J Donovan Correctional Facility	Boiler	0.06		0.12	
Sea World San Diego	Emergency generator	0.00		0.04	
Sea World San Diego	Emergency generator	0.00	0.00	0.19	0.19
UCSD Medical Center Thornton Hospital	Emergency generator	0.00		0.01	
USMC MCAS Miramar	Emergency generator	0.00	0.00	0.01	0.01
USN Hospital 2 PWC	Emergency generator	0.00	0.00	0.02	0.02
	2014 Totals	**9.24**	**0.00**	**24.50**	**3.26**
	5 Year Emission Increases	**21.18**	**0.02**	**85.77**	**3.65**

Table II-2
Unbanked Actual VOC and NOx Emission Reductions from Equipment and Facility Shutdowns
January 1, 2010 – December 31, 2014
(Tons/Year)[1]

Name	Equipment Description	VOC (TPY)	NOx(TPY)
American Airlines	IC Engine	0.01	0.16
Bardon Enterprises	Wood coating operation	9.23	0.00
Cabrillo Power Encina	Cold solvent degreaser	0.02	0.00
Cabrillo Power Encina	Cold solvent degreaser	0.03	0.00
Continental Maritime	IC Engine	0.00	0.03
HG Fenton	IC Engine	0.14	1.65
Hamilton Sunstrand	Paint spray booth	0.02	0.00
Hanson Aggregates	IC Engine	0.04	0.47
Napp Systems	Boiler	0.04	0.40
City of Oceanside	Boiler	0.02	0.43
Pomerado Hospital	Boiler	0.04	0.00
Pomerado Hospital	IC Engine	0.00	0.12
Pomerado Hospital	IC Engine	0.00	0.14
Pomerado Hospital	IC Engine	0.00	0.14
Pratt & Whitney Composites	IC Engine	0.21	0.00
Pratt & Whitney Composites	IC Engine	0.04	0.00
South Chollas Landfill	Landfill flare	0.14	1.52
S. D. Marriott Hotel	Boiler	0.03	0.55
S. D. Marriott Hotel	Boiler	0.02	0.43
S. D. Metro Pump Station 2	IC Engine	0.01	0.00
County of San Diego Mental Health Service	IC Engine	0.01	0.06
County of San Diego Mental Health Service	IC Engine	0.00	0.07
USMC Miramar Air Station	Boiler	1.67	0.27
USN 32nd St Naval Station	IC Engine	0.09	0.01
USN North Island	IC Engine	0.00	0.01
USN Submarine Base	IC Engine	0.02	0.20
USN Submarine Base	IC Engine	0.01	0.05
2010 Totals (tons)		**11.84**	**6.71**
Alvarado Hospital	IC Engine	0.00	0.02
Asphalt Inc Lakeside	Asphalt batch plant	1.67	4.44
Calmat Mission Center Road	Asphalt batch plant	1.27	4.68
Driscoll Boat Works	Marine coating operation	1.34	0.00
Eternal Hills Cemetery	Crematory furnace	0.00	0.09
Eternal Hills Cemetery	IC Engine	0.00	0.08
General Atomics	Paint spray booth	0.01	0.00
Napp Systems	Boiler	0.03	0.50
National Steel & Shipbuilders Co	IC Engine	0.03	0.33
Pomerado Hospital	Boiler	0.03	0.56
Quality Cabinet & Fixtures	Paint spray booth	1.43	0.00

[1] No adjustments to the listed unbanked shutdown emissions above were necessary due to any equipment subject to RACT were not included.

Name	Equipment Description	VOC (TPY)	NOx(TPY)
Quality Cabinet & Fixtures	Paint spray booth	0.19	0.00
Quality Cabinet & Fixtures	Paint spray booth	6.62	0.00
Salk Institute	Boiler	0.15	0.86
Salk Institute	Boiler	0.10	0.46
Scandinavian Marble Design	Cultured marble mfg	2.42	0.00
Sea World	IC Engine	1.48	3.04
Sea World	IC Engine	1.69	2.71
Sea World	IC Engine	0.00	0.01
UCSD Campus	Boiler	0.31	1.56
USDA Animal & Health Inspection	Pathological incinerator	0.00	0.05
USN North Island	Marine coating operation	1.28	0.00
VA Hospital	Boiler	0.11	0.59
VA Hospital	Boiler	0.11	0.57
	2011 Totals (tons)	**20.26**	**20.55**
Allied Casting Inc	Aluminum melting furnace	0.01	0.15
Alturdyne	Paint spray booth	0.23	0.00
CW Mc Grath	IC Engine	0.01	0.05
Encina Wastewater Authority	Wastewater flare	0.26	1.04
Encina Wastewater Authority	Wastewater treatment	2.73	0.00
Federal Sign	Metal parts coating	2.32	0.00
Gas Recovery Santee	Landfill gas extraction well	0.26	6.63
Hanson Aggregates	IC Engine	0.02	0.20
Little RW Coatings	IC Engine	0.03	0.33
Manson Construction	IC Engine	0.06	1.34
Manson Construction	IC Engine	0.45	16.94
Marine Service Commercial Diving Co	Marine coating operation	0.48	0.00
Minnesota Methane	Boiler	0.00	0.01
Otay Water District	IC Engine	0.01	0.10
Otay Water District	IC Engine	0.20	2.29
Pacific Bell	IC Engine	0.01	0.39
Pacific Bell	IC Engine	0.01	0.40
Pacific Bell	IC Engine	0.13	0.37
Pacific Gas Turbine	IC Engine	6.69	8.46
Pacific Gas Turbine	IC Engine	0.00	0.05
Pacific Gas Turbine	Paint spray booth	0.03	0.00
Palomar Medical Center	IC Engine	0.04	0.53
Partner Press LLC	Graphics art printing	0.53	0.00
Real Energy Inc	Gas turbine	0.02	0.01
Real Energy Inc	Gas turbine	0.01	0.00
Rohr Industries	IC Engine	0.05	0.00
Scripps Mercy Hospital	IC Engine	0.00	0.15
Scripps Mercy Hospital	IC Engine	0.00	0.13
Scripps Mercy Hospital	Boiler	0.05	0.29
Scripps Mercy Hospital	Boiler	0.05	0.27
SD Web Offset	Graphics art printing	0.96	0.00
SD Web Offset	Graphics art printing	0.07	0.00
Sharp Memorial Hospital	Chiller	0.06	0.35
Signet Armorlite	Lens casting mfg	0.03	0.00
UCSD Campus	IC Engine	0.00	0.01
USMC Camp Pendleton	IC Engine	0.05	0.12

Name	Equipment Description	VOC (TPY)	NOx(TPY)
USN North Island	IC Engine	0.00	0.01
USN North Island	Marine coating operation	0.68	0.00
	2012 Totals (tons)	**16.55**	**40.61**
808 Energy 3 LLC	Cogeneration engine	0.01	0.1
808 Energy 3 LLC	Cogeneration engine	0.01	0.1
808 Energy 3 LLC	Cogeneration engine	0.01	0.1
808 Energy 3 LLC	Cogeneration engine	0.01	0.1
808 Energy 3, LLC	Cogeneration engine	0.01	0.1
Acadia Pharmaceuticals Inc	Emergency Generator	0.01	0.05
Acxiom Data Quick Corp	Emergency Generator	0.01	0.05
Alvarado Hospital	Emergency Generator	0.01	0.05
Amneal Pharmaceuticals LLC	Emergency Generator	0.01	0.05
Anacomp Inc	Emergency Generator	0.01	0.05
Angelica Textile Services	Boiler	0.15	0.42
Angelica Textile Services	Boiler	0.15	0.42
Arrow Asphalt Recycling	Portable IC engine	0.01	0.05
BAE Systems SDSR	Boiler	0.15	0.42
BAE Systems SDSR	Portable IC engine	0.01	0.05
BAE Systems SDSR	Boiler	0.01	0.09
Cabrillo Power Miramar	Metal parts coating	0.20	1.00
Coronado Island Marriott	Cogeneration engine	0.53	0.96
Hanson Aggregates	Portable IC engine	0.01	0.07
RCP Block & Bric	Dredge engine	0.48	5.57
Staite R E Engineering	Dredge crane	0.03	0.38
Staite R E Engineering	Dredge crane	0.00	0.02
Staite R E Engineering	Portable IC engine	0.02	0.27
Staite R E Engineering	Portable IC engine	0.01	0.11
USN North Island	Paint spray booth	0.01	
USN Submarine Base	Degreaser	0.02	
Western Construction Components	Metal parts coating	6.50	
Barnhart Crane & Rigging Co	Portable IC engine	0.01	0.05
Barnhart Crane & Rigging Co	Portable IC engine	0.01	0.05
Barnhart Crane & Rigging Co	Portable IC engine	0.01	0.05
Beckman Coulter Inc	Emergency Generator	0.01	0.05
Beckman Coulter Inc	Emergency Generator	0.01	0.05
BJS Rentals	Portable IC engine	0.01	0.05
BJS Rentals	Portable IC engine	0.01	0.05
Borrego Water District	Portable IC engine	0.01	0.05
Buena Sanitation District	Emergency Generator	0.01	0.05
City Of SD Comm Div (PT Loma Standpipe)	Emergency Generator	0.01	0.05
City of Vista Fire Dept Hq Sta	Emergency Generator	0.01	0.05
City of Vista Fire Dept Hq Sta	Emergency Generator	0.01	0.05
Coronado Island Marriott Resort	Cogeneration engine	0.01	0.1
Coronado Shores Condominium Assn #8	Emergency Generator	0.01	0.05
Costco Wholesale Corp	Emergency Generator	0.01	0.05
County of San Diego Sheriffs Dept	Emergency Generator	0.01	0.05
County Of SD Sheriff SUB Station	Emergency Generator	0.01	0.05
CW McGrath Inc	Portable IC engine	0.01	0.05
Defense Commissary Agency	Emergency Generator	0.01	0.05
Electra Home Owners Association	Emergency Generator	0.01	0.05

Name	Equipment Description	VOC (TPY)	NOx(TPY)
Electra Home Owners Association	Emergency Generator	0.01	0.05
Elken Contracting Inc	Portable IC engine	0.01	0.05
Encinitas City Of	Emergency Generator	0.01	0.05
Escondido City Of	Cogeneration engine	0.01	0.1
Fain Drilling & Pump Co Inc	Portable IC engine	0.01	0.05
Federal Aviation Administration	Emergency Generator	0.01	0.05
Federal Aviation Administration Miramar	Emergency Generator	0.01	0.05
Gene Therapy System	Emergency Generator	0.01	0.05
General Atomics Aeronautical	Emergency Generator	0.01	0.05
General Atomics Aeronautical Systems Inc	Emergency Generator	0.01	0.05
GKN Aerospace Chemtronics Inc	Emergency Generator	0.01	0.05
Glanbia Nutritionals	Portable IC engine	0.01	0.05
Global Power Group	Portable IC engine	0.01	0.05
Hanson Aggregates Pacific Southwest Inc	Portable IC engine	0.01	0.05
Hanson Aggregates West Inc	Portable IC engine	0.01	0.05
Harte Hanks	Emergency Generator	0.01	0.05
Helix Water District	Emergency Generator	0.01	0.05
Helix Water District	Emergency Generator	0.01	0.05
Illumina Inc	Emergency Generator	0.01	0.05
J & J Abrasive Cleaning	Portable IC engine	0.01	0.05
KSWB Inc	Emergency Generator	0.01	0.05
Manson Construction Co	Portable IC engine	0.01	0.05
Marine Corps Air Station	Emergency Generator	0.01	0.05
Marriott La Jolla	Boiler	0.15	0.42
MCAS Miramar	Emergency Generator	0.01	0.05
MCAS Miramar	Portable IC engine	0.01	0.05
Metrowork	Emergency Generator	0.01	0.05
Nextel Communications Inc (Sprint)	Emergency Generator	0.01	0.05
NK San Diego LLC	Emergency Generator	0.01	0.05
Novarx	Emergency Generator	0.01	0.05
Novarx	Emergency Generator	0.01	0.05
Oceanside City Of Water Utilities	Emergency Generator	0.01	0.05
Pacific Bell	Emergency Generator	0.01	0.05
Pacific Bell	Emergency Generator	0.01	0.05
Perpetual Tree Care	Portable IC engine	0.01	0.05
Pomerado Hospital	Emergency Generator	0.01	0.05
Qualcomm Inc	Emergency Generator	0.01	0.05
Qualcomm Inc	Emergency Generator	0.01	0.05
R E Staite Engineering Inc	Portable IC engine	0.01	0.05
R E Staite Engineering Inc	Portable IC engine	0.01	0.05
R E Staite Engineering Inc	Portable IC engine	0.01	0.05
Rainbow Municipal Water District	Emergency Generator	0.01	0.05
Ramona Municipal Water District	Emergency Generator	0.01	0.05
RCP Block & Brick Inc	Portable IC engine	0.01	0.05
Roofing Services International Inc	Portable IC engine	0.01	0.05
San Diego Space Surveillance Station	Emergency Generator	0.01	0.05
Santa Barbara Tax Products Group	Emergency Generator	0.01	0.05
Scripps Health Facilities	Emergency Generator	0.01	0.05
SD City of Parks & Rec Open Space	Portable IC engine	0.01	0.05
SD City of Parks & Recreation Metro Parks Division	Portable IC engine	0.01	0.05
SD City Of Qualcomm Stadium	Portable IC engine	0.01	0.05

Name	Equipment Description	VOC (TPY)	NOx(TPY)
SD City Of Qualcomm Stadium	Portable IC engine	0.01	0.05
SD Co Of DPW Airports	Emergency Generator	0.01	0.05
SD Co Of DPW Airports	Emergency Generator	0.01	0.05
SD CO OF DPW Wastewater Management	Emergency Generator	0.01	0.05
SD CO of Gen Svcs PR0086	Emergency Generator	0.01	0.05
SD CO of Gen Svcs PR0086	Emergency Generator	0.01	0.05
SD CO OF General Services	Emergency Generator	0.01	0.05
SD CO OF General Services	Emergency Generator	0.01	0.05
Seaward Marine Svcs	Portable IC engine	0.01	0.05
Southern California Edison	Boiler	0.15	0.42
Southern California Edison	Emergency Generator	0.01	0.05
Sports Authority	Emergency Generator	0.01	0.05
Sweetwater Authority	Emergency Generator	0.01	0.05
Sycamore Landfill LLC	Gas turbine	15.90	16.20
Sycamore Landfill LLC	Gas turbine	15.90	16.20
T Mobile CA/NV LLC Escondido Msc	Emergency Generator	0.01	0.05
Tri City Medical	Emergency Generator	0.01	0.05
U S Geological Survey	Portable IC engine	0.01	0.05
US Border Patrol	Emergency Generator	0.01	0.05
USD	Emergency Generator	0.01	0.05
USMC Base Marine Facilities	Portable IC engine	0.01	0.05
USMC Base Military Support	Emergency Generator	0.01	0.05
USMC MCAS Miramar	Emergency Generator	0.01	0.05
USMC MCAS Miramar	Emergency Generator	0.01	0.05
USN NAV STA	Emergency Generator	0.01	0.05
Verdezyne Inc	Emergency Generator	0.01	0.05
Village by the Sea Homeowners Association	Emergency Generator	0.01	0.05
Wells Fargo	Emergency Generator	0.01	0.05
Wells Fargo	Emergency Generator	0.01	0.05
XO California Inc	Emergency Generator	0.01	0.05
	2013 Totals (tons)	**41.46**	**48.77**
808 Energy 3, LLC	Cogeneration Engine	0.01	0.10
808 Energy 3, LLC	Cogeneration Engine	0.01	0.10
939 Coast Management Assoc	Emergency Generator	0.01	0.05
Albertsons #6759	Emergency Generator	0.01	0.05
Alexandria Real Estate Equitor Inc/Portola	Emergency Generator	0.01	0.05
American Metal Processing	Aerospace parts coating	0.22	0.00
American Process Group Inc	Portable IC Engine	0.01	0.05
AT&T Services Inc	Emergency Generator	0.01	0.05
ATCO Equipment Rental	Portable IC Engine	0.01	0.05
BAE Systems	Emergency Generator	0.01	0.05
Bay City Electric Works Inc	IC Engine	0.01	0.10
Biolegend	Emergency Generator	0.01	0.05
BMR-Bunker Hill LP	IC Engine	0.01	0.10
BMR-Bunker Hill LP	IC Engine	0.01	0.10
BMR-Sorrento West LLC	Emergency Generator	0.01	0.05
Camp Cuyamaca	Emergency Generator	0.01	0.05
Catalent Pharma Solutions	Emergency Generator	0.01	0.05
Certified Coatings Co	Portable IC Engine	0.01	0.05
Certified Coatings Co	Portable IC Engine	0.01	0.05

Name	Equipment Description	VOC (TPY)	NOx(TPY)
Champions of The West Inc	Emergency Generator	0.01	0.05
Chemtronics	Aerospace parts coating	0.02	0.00
Chemtronics	Aerospace parts coating	0.01	0.00
City of Poway	Portable IC Engine	0.01	0.05
City of Vista	IC Engine	0.01	0.10
Clean Air Powers	IC Engine	0.01	0.10
Coca Cola Bottling Co of SD	Boiler	0.15	0.42
Coca Cola Bottling Co of SD	Boiler	0.15	0.42
Coronado Shores Homeowners Association	Emergency Generator	0.01	0.05
Cox Communications	Emergency Generator	0.01	0.05
Dimension One Spas	Misc coating operation	0.47	0.00
Dimension One Spas	Adhesive application	2.00	0.00
Dimension One Spas	Paint spray booth	2.11	0.00
Dimension One Spas	Adhesive application	1.98	0.00
Doubletree by Hilton Hotel Downtown	IC Engine	0.01	0.10
El Super	Emergency Generator	0.01	0.05
Escondido Surgery Center	Emergency Generator	0.01	0.05
Frey Environmental Inc	IC Engine	0.01	0.10
General Atomics	IC Engine	0.00	0.02
General Atomics	Emergency Generator	0.01	0.05
General Atomics Electronic Systems Inc	Emergency Generator	0.01	0.05
George L Sanders Welding Co	Portable IC Engine	0.01	0.05
GKN Aerospace Chemtronics	Metal inspection operation	0.71	0.00
GKN Aerospace Chemtronics	Metal inspection operation	0.23	0.00
GKN Aerospace Chemtronics	Metal inspection operation	0.37	0.00
GKN Aerospace Chemtronics	Metal inspection operation	0.40	0.00
GKN Aerospace Chemtronics	Paint spray booth	0.25	0.00
Jacobs and Cushman San Diego Food Bank	Emergency Generator	0.01	0.05
Kilroy Realty LP	Emergency Generator	0.01	0.05
Kilroy Realty LP	Emergency Generator	0.01	0.05
Kilroy Realty LP	Emergency Generator	0.01	0.05
Mercury Tech Center LLC	Emergency Generator	0.01	0.05
Mercury Tech Center LLC	Emergency Generator	0.01	0.05
Metrome Homeowners Association	Emergency Generator	0.01	0.05
Mitchell International	Emergency Generator	0.01	0.05
Mitchell International	IC Engine	0.01	0.10
Movie Manufacturing & Leasing Co Inc	Portable IC Engine	0.01	0.05
Movie Manufacturing & Leasing Co Inc	Portable IC Engine	0.01	0.05
Napp Systems Inc	Boiler	0.15	0.42
Napp Systems Inc	Misc coating operation	6.69	0.30
Napp Systems Inc	Graphics art printing	2.70	0.00
Napp Systems Inc	Plastic film coating	0.08	0.00
National City Foundry	IC Engine	0.00	0.03
Noven Pharmaceuticals Inc	Emergency Generator	0.01	0.05
Palomar Medical Center	IC Engine	0.03	0.61
Petco Animal Supplies Inc	Emergency Generator	0.01	0.05
Petco Animal Supplies Inc	Emergency Generator	0.01	0.05
Petco Animal Supplies Inc	Emergency Generator	0.01	0.05
Pyramid Construction & Aggregates Inc	Portable IC Engine	0.01	0.05
Qualcomm Inc	Emergency Generator	0.01	0.05
Ray's Tree Service	Portable IC Engine	0.01	0.05

Name	Equipment Description	VOC (TPY)	NOx(TPY)
Miramar Landfill	IC Engine	0.01	0.63
San Diego City of Metro Wastewater Dept	Emergency Generator	0.01	0.05
Scripps Health Whittier Institute	Emergency Generator	0.01	0.05
SD City Dept of Metro Wastewater	Emergency Generator	0.01	0.05
SD City Of Metro Wastewater Dept	Emergency Generator	0.01	0.05
SD City Of Metro Wastewater Dept	Emergency Generator	0.01	0.05
SD City Of Miramar Landfill	Portable IC Engine	0.01	0.05
SD CO DEPT OF GENERAL SVCS PRO054	Emergency Generator	0.01	0.05
SD CO OF DPW WASTEWATER MGMT	IC Engine	0.01	0.10
SD Co Of Las Colinas PR0072	Emergency Generator	0.01	0.05
SD Co Regional Airport Authority	Boiler	0.15	0.42
SD State University	Emergency Generator	0.01	0.05
SD Stucco Co	Portable IC Engine	0.01	0.05
SD Unified School District	Portable IC Engine	0.01	0.05
SDG&E – Mission Switching Center	IC Engine	0.00	0.02
SDG&E Co	Emergency Generator	0.01	0.05
Sharp Mesa Vista Hospital	Emergency Generator	0.01	0.05
Sharp Mesa Vista Hospital	Emergency Generator	0.01	0.05
Silvia Construction Inc	Portable IC Engine	0.01	0.05
Southern Calif Edison	Metal parts coating	0.26	0.00
Southern Calif Edison	Metal parts coating	0.57	0.00
Southern Calif Edison	Metal parts coating	0.08	0.00
Southern Calif Edison	IC Engine	0.00	0.13
Southern Calif Edison	Wood coating operation	0.01	0.00
Southern Calif Edison	IC Engine	0.08	3.08
Southern Calif Edison	IC Engine	0.08	3.22
Southern California Edison	Emergency Generator	0.01	0.05
Southern California Edison	Emergency Generator	0.01	0.05
Southern California Edison	Emergency Generator	0.01	0.05
Space & Naval Warfare System Center	IC Engine	0.00	0.03
Space & Naval Warfare Systems Ctr	Emergency Generator	0.01	0.05
Symcoat Metal Processing	Vapor degreaser	2.00	0.00
Symcoat Metal Processing	Emergency Generator	0.01	0.05
UCSD	Emergency Generator	0.01	0.05
UCSD Medical Center Thornton Hospital	Emergency Generator	0.01	0.05
Unitrin Direct Insurance Corp	Emergency Generator	0.01	0.05
US Border Patrol	Emergency Generator	0.01	0.05
US Postal Service	Cogeneration Engine	0.01	0.10
USD	Emergency Generator	0.01	0.05
USMC Miramar	Boiler	0.00	0.03
USMC Miramar	IC Engine	0.00	0.03
USMC Miramar	IC Engine	0.00	0.01
USMC Camp Pendleton	IC Engine	0.00	0.05
USMC Camp Pendleton	IC Engine	0.00	0.04
USMC Camp Pendleton	IC Engine	0.00	0.01
USMC Base Military Support	Emergency Generator	0.01	0.05
USMC Base Public Utilities U21	Emergency Generator	0.01	0.05
USMC Base Public Utilities	Emergency Generator	0.01	0.05
USMC MCAS Miramar	Emergency Generator	0.01	0.05
USMC MCAS Miramar	Emergency Generator	0.01	0.05
USMC MCAS Miramar	Boiler	0.15	0.42

Name	Equipment Description	VOC (TPY)	NOx(TPY)
USMC MCAS Miramar	Boiler	0.15	0.42
USN Amphibious Base	IC Engine	0.01	0.04
USN Amphibious Base	IC Engine	0.00	0.06
USN Amphibious Base	IC Engine	0.01	0.09
USN Amphibious Base Coronado	Emergency Generator	0.01	0.05
USN Amphibious Base Coronado	Emergency Generator	0.01	0.05
USN Amphibious Base Coronado	Emergency Generator	0.01	0.05
USN Hospital	Boiler	0.02	0.12
USN Hospital	Boiler	0.02	0.13
USN Hospital 2 PWC	Boiler	0.15	0.42
USN Hospital 2 PWC	Boiler	0.15	0.42
USN NAV Sta 2 Public Works Center	Portable IC Engine	0.01	0.05
USN NAV Sta 2 Public Works Center	Portable IC Engine	0.01	0.05
Vulcan Materials	Cold solvent degreaser	0.02	0.00
Vulcan Materials	IC Engine	1.68	8.26
Vulcan Materials	Cold solvent degreaser	0.02	0.00
Walton/Greenlaw South Bay Holdings VI, LLC	Emergency Generator	0.01	0.05
White Sands of La Jolla	Emergency Generator	0.01	0.05
White Sands of La Jolla	Emergency Generator	0.01	0.05
	2014 Totals (tons)	**25.23**	**25.34**
	5 Year Overall Totals (tons):	**115.34**	**141.98**

Table II-3
Net Emissions Differential:
Comparing Permitted Emission Increases from Sources > 10 Tons/Year
to Unbanked Actual Emission Reductions from Shutdowns (Tons/Year)

Year	Pollutant	Increase from Sources >10 tons	Unbanked Reduction From Shutdowns	Emissions Differential
1999	**VOC**	**30.2**	**-51.3**	**-21.1**
	NOx	20.3	-16.6	3.7
2000	**VOC**	**47.5**	**-67.6**	**-20.1**
	NOx	0	-9.8	-9.8
2001	**VOC**	**121.5**	**-73.8**	**47.7**
	NOx	5	-10.7	-5.7
2002	**VOC**	**49.6**	**-124.1**	**-74.5**
	NOx	3	-17.5	-14.5
2003	**VOC**	**55.8**	**-131.6**	**-75.8**
	NOx	30.5	-23.6	6.9
2004	**VOC**	**23.2**	**-14.4**	**8.8**
	NOx	14.5	-6.8	7.7
2005	**VOC**	**28.7**	**-61.3**	**-32.6**
	NOx	7.8	-32.1	-24.3
2006	**VOC**	**54.1**	**-37.7**	**16.4**
	NOx	22.2	-10.3	11.9
2010	**VOC**	**0.1**	**-11.8**	**-11.7**
	NOx	0.2	-6.7	-6.5
2011	**VOC**	**0**	**-20.3**	**-20.3**
	NOx	0.6	-20.6	-20.0
2012	**VOC**	**4.7**	**-16.6**	**-11.9**
	NOx	12.3	-40.6	-28.3
2013	**VOC**	**7**	**-41.5**	**-34.5**
	NOx	48.2	-48.8	-0.6
2014	**VOC**	**9.2**	**-25.2**	**-16.0**
	NOx	24.5	-25.3	-0.8
5-Year Annual Average 2010-2014[2]	**VOC**	**4.2**	**-23.1**	**-18.9**
	NOx	**17.2**	**-28.4**	**-11.2**
13-Year Annual Average 01/99-12/14	**VOC**	**33.2**	**-52.1**	**-18.9**
	NOx	**14.5**	**-20.7**	**-6.2**

Table II-4
Banked Emission Reduction Credits, Amount, and Source
as of November 19, 2014

Company Name	NOx (Tons/Year)	VOC (Tons/Year)	Reduction Source
Applied Energy LLC	34.6	--	Shutdown (Equipment)
Cabrillo Enterprises, LLC	--	1.3	Shutdown (Equipment)
Cabrillo Power II, LLC	37.6	--	Shutdown (Equipment)
Callaway Golf Co.	--	12.2	Shutdown (Equipment)
City of San Diego, MWD	--	23.1	Shutdown (Equipment)
Dynergy	1.0	--	Shutdown (Facility)
General Dynamics Properties, Inc.	1.3	0.2	Shutdown (Facility)
Grey K. Environmental Fund, LP		25.1	Process Modification
Grey K. Environmental Fund, LP	4.1	61.2	Shutdown (Facility)
Hanson Aggregates, Pacific SW Region	0.9	0.3	Modification - Engine
Hughes-Aircraft Co., Electro-Opti Cal	--	1.3	Shutdown (Equipment)
Koch Membrane Systems, Inc.	--	2.9	Shutdown (Facility)
Kyocera America	16.7	7.6	Shutdown (Equipment)
Muht-Hei, Inc.	--	9.1	Shutdown (Equipment)
National Steel & Shipbuilding	0.5	0.6	Shutdown (Equipment)
Naval Air Station, North Island	30.0	--	Shutdown (Equipment)
Naval Station, San Diego	5.5	0.1	Shutdown (Equipment)
Navy Region Southwest	12.0	--	Shutdown (Equipment)
Northrop-Grumman Ryan Aeronautical	--	1.2	Shutdown (Facility)
Olduvai Gorge LLC	29.9	60.0	Shutdown (Facility)
Otay Mesa Generating Co., LLC	5.2	--	Process Modification
Performance Contracting Inc.	--	1.0	Shutdown (Facility)
Pio Pico Energy Center, LLC	--	6.6	Process Modification
Qualcomm	20.6	--	Shutdown (Equipment)
SDG&E	23.9	0.4	Modification - Turbine
Sherwin Williams	--	7.5	Process Modification
Shipyard Supplies, Inc.	--	2.0	Equipment Modification
Solar Turbines	10.0	0.6	Shutdown (Equipment)
Southern California Edison Company	0.5	--	Shutdown (Equipment)
Surface Technologies	--	1.5	Shutdown (Facility)
SW Division, Naval Facilities Engineering	--	47.8	Shutdown (Station)
Unisys Corporation	--	7.9	Shutdown (Equipment)
United States Marine Corps	3.0	--	Shutdown (Station)
US Foam	--	0.1	Shutdown (Facility)
USN Communications Station	2.6	0.1	Shutdown (Equipment)
Veterans Administration Hospital	1.9	--	Modification - Engine
Total:	241.8	281.5	
From Permanent Shutdowns:	209.9 (86.8%)	239.7 (85.2%)	
From Process or Equipment Modifications:	31.9 (13.2%)	41.8 (14.8%)	

Table II-5
Updated VOC Emissions Impact
Resulting from Repeal of State Offset Requirements (Tons/Year)

Year	*Actual* or Projected Impact[1]		1998 Assessment Worst-Case[2] (Cumulative)	1998 Assessment Expected-Case[3] (Cumulative)
	Annual	Cumulative		
1998	*0*	0	*0*	*0*
1999	*0*	0	33	2
2000	*0*	0	66	4
2001	*47.7*	47.7	99	6
2002	*0*	47.7	132	7
2003	*0*	47.7	165	9
2004	*8.8*	56.5	198	11
2005	*0*	56.5	231	13
2006	*16.38*	72.9	264	14
2010	*0*	72.9	396	22
2011	*0*	72.9	429	23
2012	*0*	72.9	462	25
2013	*0*	72.9	495	27
2014	*0*	72.9	528	29
2015	0	*72.9*	561	30
2020	0	72.9	726	39
2025	0	72.9	891	48
2030	0	72.9	1056	57
2035	0	72.9	1221	66

1 1998-2014 data from Table 3. 2015-2035 projections based on ARB Almanac Emissions Projection Data (Published in 2013). Since repeal of State offset requirements has not "caused" emission reductions, any negative values (indicating unbanked shutdowns had exceeded new sources) were replaced with zero values.

2 1998 worst-case scenario did not consider emission benefits from shutdowns. Conservatively assumed annual increase of historic-high, 33 tons per year starting in 1999.

3 1998 expected-case scenario assumed repeal of state offset requirements would result in foregoing offsetting reductions from voluntary process or control technology improvements. Assumed annual net increase of 1.78 tons per year starting in 1999.

Table II-6
Updated NOx Emissions Impact
Resulting from Repeal of State Offset Requirements (Tons/Year)

Year	*Emissions Differential* or Projected Impact[1]		1998 Assessment Worst-Case[2] (Cumulative)	1998 Assessment Expected-Case[3] (Cumulative)
	Annual	Cumulative		
1998	*0.0*	0.0	0	0
1999	*3.7*	3.7	15	3
2000	*0.0*	3.7	30	6
2001	*0.0*	3.7	45	9
2002	*0.0*	3.7	60	12
2003	*6.9*	10.6	75	15
2004	*7.7*	18.3	90	18
2005	*0.0*	18.3	105	21
2006	*11.9*	30.2	120	24
2010	*0.0*	30.2	180	36
2011	*0.0*	30.2	195	39
2012	*0.0*	30.2	210	42
2013	*0.0*	30.2	225	45
2014	*0.0*	30.2	240	48
2015	0.0	30.2	255	52
2020	0.0	30.2	330	67
2025	0.0	30.2	405	82
2030	0.0	30.2	480	97
2035	0.0	30.2	555	112

[1] 1998-2014 data from Table 3. 2015-2035 projections based on ARB Almanac Emissions Projection Data (Published in 2013). Since repeal of state offset requirements has not "caused" emission reductions, any negative values (indicating unbanked shutdowns had exceeded new sources) were replaced with zero values.

[2] 1998 worst-case scenario did not consider emission benefits from shutdowns. Assumed annual increase of 15 tons per year starting in 1999

[3] 1998 expected-case scenario assumed repeal of state offset requirements would result in foregoing offsetting reductions from voluntary process or control technology improvements. Assumed annual net increase of 3 tons per year starting in 1999.

Table II-7
Cumulative VOC Emissions Impact of the Repeal of State Offset Requirements as a Percentage of Annual Total Emissions Inventory (Tons/Year)

Year	Total Inventory[1]	*Actual* or Projected Net Impact[2]	
		Tons	% of Total Inventory
1998	82,138	*0.0*	*0.00%*
1999	81,735	*0.0*	*0.00%*
2000	77,952	*0.0*	*0.00%*
2001	74,377	*47.7*	*0.06%*
2002	69,764	*47.7*	*0.07%*
2003	67,225	*47.7*	*0.07%*
2004	66,088	*56.5*	*0.09%*
2005	63,093	*56.5*	*0.09%*
2006	61,035	*72.9*	*0.12%*
2010	49,436	*72.9*	*0.15%*
2011	48,549	*72.9*	*0.15%*
2012	48,049	*72.9*	*0.15%*
2014	45,829	*72.9*	*0.16%*
2015	43,545	72.9	0.17%
2020	41,683	72.9	0.17%
2025	40,880	72.9	0.18%
2030	40,771	72.9	0.18%
2035	40,698	72.9	0.18%

[1] ARB emissions inventory (November 2015); average daily values multiplied by 365. 2013 data not available from ARB due to QA review.

[2] From Table 3. Since repeal of state offset requirements has not "caused" emission reductions, any negative values (indicating unbanked shutdowns had exceeded new sources) were replaced with zero values.

Table II-8
Cumulative NOx Emissions Impact of the Repeal of State Offset Requirements as a Percentage of Annual Total Emissions Inventory (Tons/Year)

Year	Total Inventory[1]	*Actual* or Projected Net Impact[2]	
		Tons	% of Total Inventory
1998	92,728	*0.0*	*0.00%*
1999	92,154	*3.7*	*0.00%*
2000	90,926	*3.7*	*0.00%*
2001	88,596	*3.7*	*0.00%*
2002	83,183	*3.7*	*0.00%*
2003	82,142	*10.6*	*0.01%*
2004	79,309	*18.3*	*0.02%*
2005	79,584	*18.3*	*0.02%*
2006	76,929	*30.2*	*0.04%*
2010	44,012	*30.2*	*0.07%*
2011	42,132	*30.2*	*0.07%*
2012	41,807	*30.2*	*0.07%*
2014	36,022	*30.2*	*0.08%*
2015	35,624	30.2	0.08%
2020	27,339	30.2	0.11%
2025	22,521	30.2	0.13%
2030	20.,732	30.2	0.15%
2035	19,966	30.2	0.15%

[1] ARB emissions inventory (November 2015); average daily values multiplied by 365. 2013 data not available from ARB due to QA review.

[2] From Table 3. Since repeal of state offset requirements has not "caused" emission reductions, any negative values (indicating unbanked shutdowns had exceeded new sources) were replaced with zero values.

Table II-9
Cumulative VOC Emissions Impact of the Repeal of State Offset Requirements as a Percentage of Annual Stationary-Source Emissions Inventory (Tons/Year)

Year	Stationary Source Inventory[1]	*Actual* or Projected Net Impact[2]	
		Tons	% of Total Inventory
1998	10,053	*0*	*0.00%*
1999	11,512	*0*	*0.00%*
2000	11,342	*0*	*0.00%*
2001	11,040	*47.7*	*0.43%*
2002	11,063	*47.7*	*0.43%*
2003	11,141	*47.7*	*0.43%*
2004	11,283	*56.5*	*0.50%*
2005	11,328	*56.5*	*0.50%*
2006	11,405	*72.9*	*0.64%*
2010	11,052	*72.9*	*0.66%*
2011	11,052	*72.9*	*0.66%*
2012	10,994	*72.9*	*0.66%*
2013	ARB data not available		
2014	10,603	*72.9*	*0.69%*
2015	11,498	72.9	0.63%
2020	12,410	72.9	0.59%
2025	12,739	72.9	0.57%
2030	13,104	72.9	0.56%
2035	13,469	72.9	0.54%

[1] ARB emissions inventory (November 2015); average daily values multiplied by 365. 2013 data not available from ARB due to QA review.

[2] From Table 3. Since repeal of state offset requirements has not "caused" emission reductions, any negative values (indicating unbanked shutdowns had exceeded new sources) were replaced with zero values.

Table II-10
Cumulative NOx Emissions Impact of the Repeal of State Offset Requirements as a Percentage of Annual Stationary-Source Emissions Inventory (Tons/Year)

Year	Stationary Source Inventory[1]	*Actual* or Projected Net Impact[2]	
		Tons	% of Total Inventory
1998	5,227	*0.0*	*0.00%*
1999	5,011	*3.7*	*0.07%*
2000	5,062	*3.7*	*0.07%*
2001	4,817	*3.7*	*0.08%*
2002	3,311	*3.7*	*0.11%*
2003	3,126	*10.6*	*0.34%*
2004	3,191	*18.3*	*0.57%*
2005	3,191	*18.3*	*0.57%*
2006	3,236	*30.2*	*0.93%*
2010	1,610	*30.2*	*1.87%*
2011	1,570	*30.2*	*1.92%*
2012	1,475	*30.2*	*2.05%*
2013	ARB data not available		
2014	1,029	*30.2*	*2.93%*
2015	1,606	30.2	1.88%
2020	1,570	30.2	1.92%
2025	1,606	30.2	1.88%
2030	1,643	30.2	1.84%
2035	1,716	30.2	1.76%

[1] ARB emissions inventory (November 2015); average daily values multiplied by 365. 2013 data not available from ARB due to QA review.

[2] From Table 3. Since repeal of state offset requirements has not "caused" emission reductions, any negative values (indicating unbanked shutdowns had exceeded new sources) were replaced with zero values.

Table II-11
2015 Versus 1998[1] Projections of Cumulative VOC Emissions Impact of Repeal as a Percentage of Annual Total Emissions Inventory (Tons/Year)

Year	*Actual* or Projected Impact	1998 Worst-Case Assessment (% of total VOC's)	1998 Expected-Case Assessment (% of total VOC's)
1998	*0.00%*	0.00%	0.00%
1999	*0.00%*	0.04%	0.00%
2000	*0.00%*	0.08%	0.01%
2001	*0.06%*	0.13%	0.01%
2002	*0.06%*	0.19%	0.01%
2003	*0.06%*	0.25%	0.02%
2004	*0.09%*	0.30%	0.02%
2005	*0.09%*	0.37%	0.02%
2006	*0.12%*	0.43%	0.02%
2010	*0.12%*	0.80%	0.04%
2011	*0.12%*	0.88%	0.05%
2012	*0.12%*	0.96%	0.05%
2013	ARB data not available		
2014	*0.12%*	1.15%	0.06%
2015	0.17%	1.29%	0.07%
2020	0.20%	1.74%	0.09%
2025	0.20%	2.18%	0.12%
2030	0.20%	2.59%	0.14%
2035	0.21%	3.00%	0.16%

[1] Percentages updated to reflect November 2014, ARB emission inventory and projections.

Table II-12
2015 Versus 1998[1] Projections of Cumulative NOx Emissions Impact of Repeal as a Percentage of Annual Total Emissions Inventory (Tons/Year)

Year	*Actual* or Projected Impact	1998 Worst-Case Assessment (% of total NOx)	1998 Expected-Case Assessment (% of total NOx)
1998	*0.00%*	0.00%	0.00%
1999	*0.00%*	0.02%	0.00%
2000	*0.00%*	0.03%	0.01%
2001	*0.00%*	0.05%	0.01%
2002	*0.00%*	0.07%	0.01%
2003	*0.01%*	0.09%	0.02%
2004	*0.02%*	0.11%	0.02%
2005	*0.02%*	0.13%	0.03%
2006	*0.04%*	0.16%	0.03%
2010	*0.07%*	0.41%	0.08%
2011	*0.07%*	0.46%	0.09%
2012	*0.07%*	0.50%	0.10%
2013	ARB data not available		
2014	*0.08%*	0.67%	0.13%
2015	0.08%	0.72%	0.14%
2020	0.11%	1.21%	0.24%
2025	0.13%	1.80%	0.36%
2030	0.15%	2.32%	0.47%
2035	0.15%	2.78%	0.56%

[1] Percentages updated to reflect November 2014, ARB emission inventory and projections.

Table II-13
2015 Versus 1998 Projections of Cumulative VOC Emissions Impact of Repeal as a Percentage of Annual Stationary-Source Emissions Inventory (Tons/Year)

Year	*Actual* or Projected Impact	1998 Assessment Worst-Case (Cumulative)	1998 Assessment Expected-Case (Cumulative)
1998	*0.00%*	0.00%	0.00%
1999	*0.00%*	0.29%	0.02%
2000	*0.00%*	0.58%	0.03%
2001	*0.43%*	0.90%	0.05%
2002	*0.43%*	1.19%	0.06%
2003	*0.43%*	1.48%	0.08%
2004	*0.50%*	1.75%	0.09%
2005	*0.50%*	2.04%	0.11%
2006	*0.50%*	2.31%	0.12%
2010	*0.51%*	3.58%	0.19%
2011	*0.51%*	3.88%	0.21%
2012	*0.51%*	4.20%	0.23%
2013	ARB data not available		
2014	*0.53%*	4.98%	0.27%
2015	0.49%	4.88%	0.26%
2020	0.46%	5.85%	0.32%
2025	0.44%	6.99%	0.38%
2030	0.43%	8.06%	0.43%
2035	0.42%	9.07%	0.49%

Table II-14
2015 Versus 1998 Projections of Cumulative NOx Emissions Impact of Repeal as a Percentage of Annual Stationary-Source Emissions Inventory (Tons/Year)

Year	*Actual* or Projected Impact	1998 Assessment Worst-Case (Cumulative)	1998 Assessment Expected-Case (Cumulative)
1998	*0.00%*	0.00%	0.00%
1999	*0.07%*	0.30%	0.06%
2000	*0.07%*	0.59%	0.12%
2001	*0.08%*	0.93%	0.19%
2002	*0.11%*	1.81%	0.37%
2003	*0.34%*	2.40%	0.48%
2004	*0.57%*	2.82%	0.57%
2005	*0.57%*	3.29%	0.66%
2006	*0.56%*	3.71%	0.75%
2010	*1.13%*	11.18%	2.26%
2011	*1.16%*	12.42%	2.51%
2012	*1.23%*	14.24%	2.88%
2013	ARB data not available		
2014	*1.77%*	23.32%	4.71%
2015	1.13%	15.88%	3.21%
2020	1.16%	21.03%	3.47%
2025	1.13%	25.22%	3.58%
2030	1.11%	29.22%	3.69%
2035	1.06%	32.35%	3.71%

Table II-15
Comparison of Original 1998 and 2015[1] VOC Emissions Inventories and Inventory Projections for San Diego County (Tons/Year)

Year	Stationary		Area		Mobile		Total Inventory	
	1998 Demo	2014 Update	1998 Demo	2014 Update	1998 Demo	2014 Update	1998 Demo	2014 Update
1998	18,710	10,053	17,155	14,091	49,246	57,994	85,111	82,138
1999	18,900	11,512	16,863	14,337	44,771	55,885	80,534	81,735
2000	19,090	11,342	16,571	14,240	40,296	52,370	75,957	77,952
2001	--	11,040	--	14,379	--	48,958	--	74,377
2002	--	11,063	--	14,405	--	44,297	--	69,764
2003	--	11,141	--	13,554	--	42,530	--	67,225
2004	--	11,283	--	13,308	--	41,497	--	66,088
2005	20,973	11,328	17,411	13,045	30,003	38,720	68,387	63,093
2006	--	11,405	--	13,081	--	36,549	--	61,035
2010	25,769	11,052	17,958	13,366	23,360	25,017	67,087	49,436
2011	--	11,052	--	13,377	--	24,119	--	48,549
2012	--	10,994	--	13,155	--	23,900	--	48,049
2013	ARB data not available		ARB data not available		ARB data not available		ARB data not available	
2014	--	10,603	--	13,005	--	22,221	--	45,829
2015	--	11,498	--	12,848	--	19,199	--	43,545
2020	--	12,410	--	13,323	--	15,951	--	41,683
2025	--	12,739	--	13,615	--	14,527	--	40,880
2030	--	13,104	--	14,016	--	13,651	--	40,771
2035	--	13,469	--	14,272	--	12,958	--	40,698

[1] Source: ARB, November 2015. Actual emissions were based on CEIDARS database. 2013 data not available from ARB due to QA review. Projected emissions were based on ARB Almanac Emission Projection Data (Published in 2013). Total inventory does not include natural sources and off-shore emissions.

Table II-16
Comparison of Original 1998 and 2015[1] NOx Emissions Inventories and Inventory Projections for San Diego County (Tons/Year)

Year	Stationary		Area		Mobile		Total Inventory	
	1998 Demo	2014 Update	1998 Demo	2014 Update	1998 Demo	2014 Update	1998 Demo	2014 Update
1998	4,855	5,227	2,139	988	66,766	86,513	73,760	92,728
1999	4,599	5,011	2,183	989	62,729	86,153	69,511	92,154
2000	4,344	5,062	2,227	990	58,692	84,874	65,262	90,926
2001	--	4,817	--	991	--	82,789	--	88,596
2002	--	3,311	--	992	--	78,879	--	83,183
2003	--	3,126	--	994	--	78,023	--	82,142
2004	--	3,191	--	996	--	75,122	--	79,309
2005	3,614	3,191	2,409	995	50,042	75,398	56,064	79,584
2006	--	3,236	--	996	--	72,697	--	76,929
2010	4,088	1,610	2,519	942	45,114	41,460	51,721	44,012
2011	--	1,570	--	949	--	39,613	--	42,132
2012	--	1,475	--	945	--	39,387	--	41,807
2013	ARB data not available		ARB data not available		ARB data not available		ARB data not available	
2014	--	1,029	--	953	--	34,040	--	36,022
2015	--	1,606	--	986	--	33,033	--	35,625
2020	--	1,570	--	1,022	--	24,747	--	27,339
2025	--	1,606	--	1,059	--	19,856	--	22,521
2030	--	1,643	--	1,095	--	17,995	--	20,732
2035	--	1,716	--	1,168	--	17,082	--	19,966

[1] Source: ARB, November 2015. Actual emissions were based on CEIDARS database. 2013 data not available from ARB due to QA review. Projected emissions were based on ARB Almanac Emission Projection Data (Published in 2013). Total inventory does not include natural sources and off-shore emissions.